AUGUST 12, 1944

Railway Age

Founded in 1856

GM Freight Diesels for the COTTON BELT

COTTON BELT ROUTE

GENERAL MOTORS LOCOMOTIVES

ONE important factor in the extraordinary wartime performance of American railroads has been the expanding employment of Diesel power. Today, fifteen railroads are operating General Motors Diesel Freight Locomotives — thirteen of these railroads have re-orders on file, and eight new railroads have GM Freight Diesels on order. The Cotton Belt is the latest road to install GM Freight Diesels which will greatly strengthen this road's motive power by providing the ultimate in rail transportation.

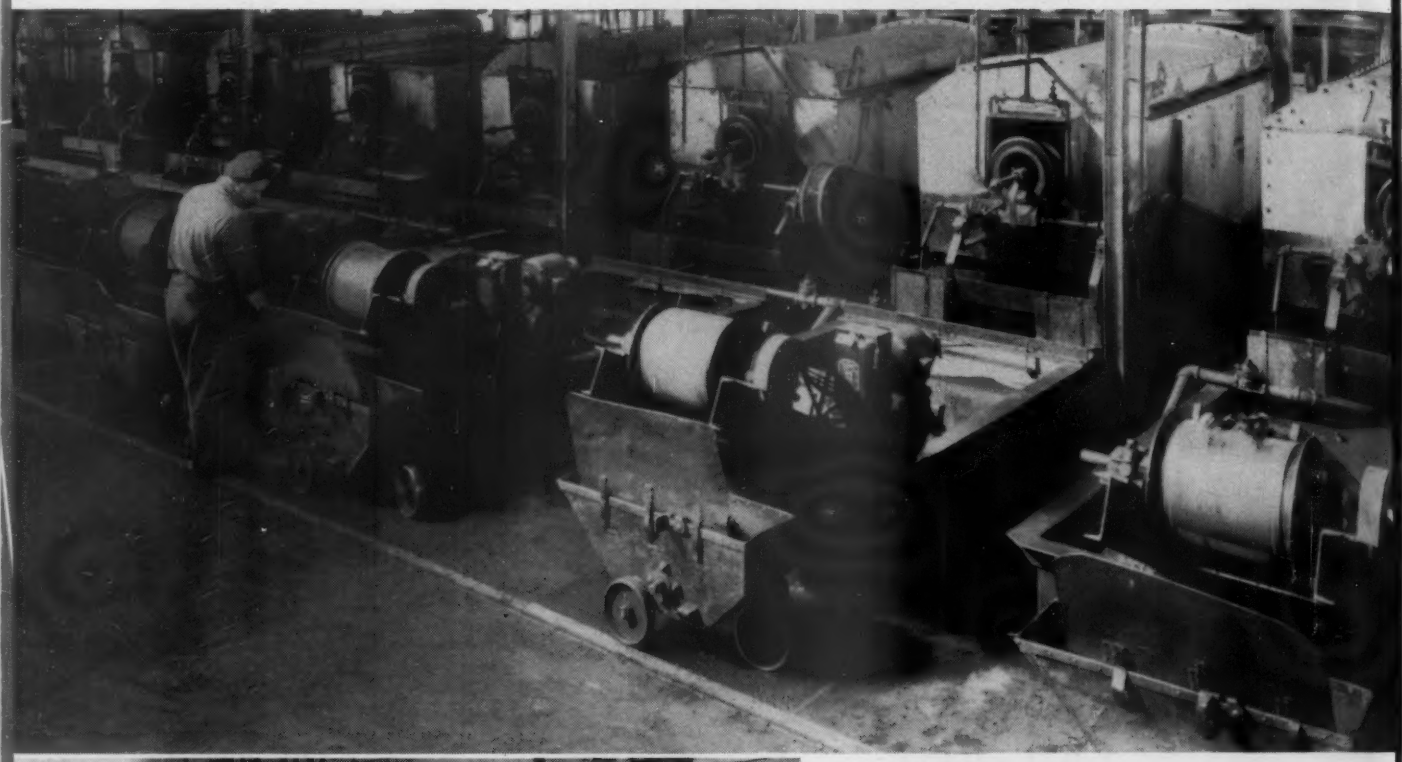
★ BACK THE INVASIONS — BUY MORE WAR BONDS ★

ELECTRO-MOTIVE DIVISION

GENERAL MOTORS CORPORATION LA GRANGE ILLINOIS U.S.A.

Reliance **HY-CROME** *Spring Washers*

PUTTING THE *Spring* IN HY-CROME



● Close control of heat treating methods is the reason for Hy-Crome's excellent spring qualities.

● Spring Washers, having been formed from steel with the proper annealed structure, are maintained at the correct temperature in cycle controlled hardening furnaces and are fast quenched in temperature controlled oil tanks of unusually large capacity—automatic conveyors carry Hy-Chrome Spring Washers from hardening furnace and oil quench to tote pans as shown above.

● Drawing to proper temperature after hardening in instrument controlled furnaces, shown at left, to relieve stress in the structure and put the *SPRING* in Hy-Crome Spring Washers completes the heat treating operation. Experienced personnel under the supervision of our Metallurgical Department control the heat treating operation. An opportunity to discuss Hy-Crome Spring Washers with you and arrange a test will be appreciated.

"Tension There in Spite of Wear"

EATON MANUFACTURING CO. RELIANCE SPRING WASHER DIVISION, MASSILLON, OHIO

Sales Offices: New York • Cleveland • Detroit • Chicago • St. Louis • San Francisco • Montreal

STRONG? yes DURABLE? yes SAFE? yes!

In the Bethlehem wheel shop, the first and fundamental rule is that every wheel must be a *safe* wheel. A wheel with an extra "plus" margin. A wheel that will handle today's crushing loads and still have something in reserve.

This extra margin of safety has its beginnings in the fine wrought steel of which Bethlehem wheels are made, and grows during the successive steps of manufacture. It is the first thought of the men who make each critical, point-by-point inspection.

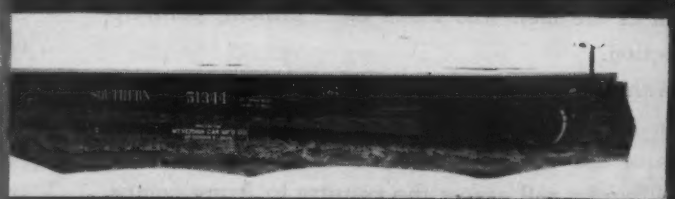
Today, with the railroads handling the greatest volume of traffic in their history, dependable transportation is a cornerstone of the war effort. Huge tonnages of war supplies are rolling by rail across the country to Army camps, Navy bases, ports of embarkation. Each day, members of the armed forces are traveling by rail in ever-growing numbers. Safe delivery of troops and war materials is the railroads' Number One responsibility.

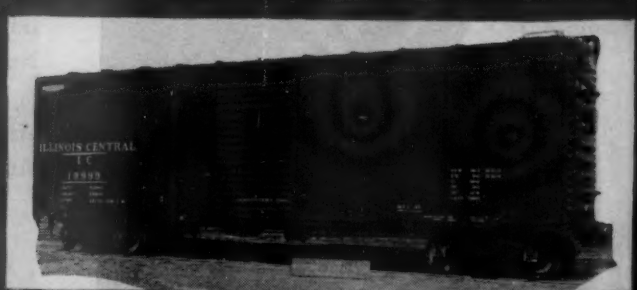
By the thousands, Bethlehem Wrought Steel Wheels . . . strong, durable, *safe* . . . are helping the railroads of America carry their unprecedented wartime responsibilities.

★ ★ ★ BETHLEHEM STEEL ★ ★ ★

Published weekly by Simmons-Boardman Publishing Corporation, 1309 Noble Street, Philadelphia, Pa. Entered as second class matter, January 4, 1933, at the Post Office at Philadelphia, Pa., under the act of March 3, 1879. Subscription price $6.00 for one year U. S. and Canada. Single copies, 25 cents each. Vol. 117, No. 7.

with MT. VERNON





PORTER
"Better Built" Equipment
Established 1866

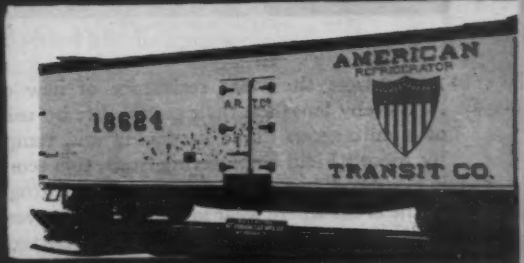
MT. VERNON

Division of H. K. PORTER C

PITTSBURGH, PA. • BLAIRSVILLE, PA. • MT. VERNON, ILL NE

Better-Built FREIGHT CARS

Mt. Vernon Car Mfg. Co.'s facilities and its location in an area of adequate labor supply, assure the best possible deliveries under wartime conditions.



LOCOMOTIVE DIVISION:
Diesel, Diesel-Electric, Electric, Steam, and Fireless Steam Locomotives.

PROCESS EQUIPMENT DIVISION:
Agitators, Mixers, Blenders, Ball and Pebble Mills, Autoclaves, Driers, Digesters, Condensers, Evaporators, Fractionating Columns, Heat Exchangers, Pressure Vessels, Tanks, Vulcanizers, Jacketed Fittings.

QUIMBY PUMP DIVISION:
Screw, Rotex, Centrifugal, Chemical Pumps.

ORDNANCE DIVISION:
Projectiles, Heavy Forgings, Breech Blocks, Winches.

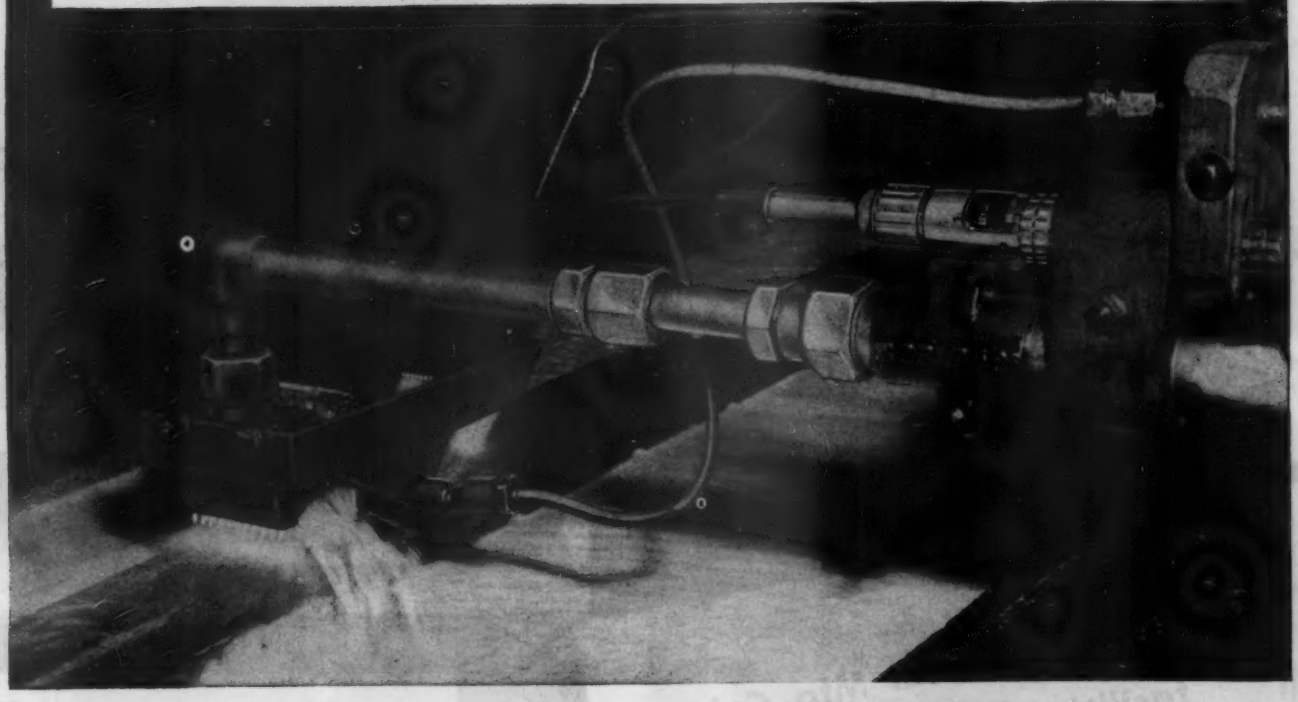
NCAR MFG. CO.

TER COMPANY, Inc.

ON, ILL NEW BRUNSWICK, N. J. • NEWARK, N. J.

SIMULTANEOUS FLAME HARDENING AND TEMPERING

lengthens life of open hearth steel frogs

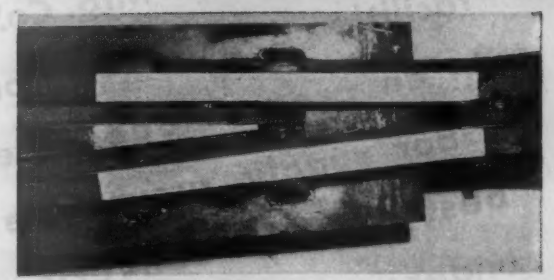


INCREASE the wear resistance of new carbon steel frogs and thereby lengthen their service life by using the modern method of simultaneous flame hardening and tempering. First developed by Airco's Field Engineering Staff, this economical surface hardening method imparts a hard "skin" to frog points and wing rails at the areas where wear is usually most severe. It provides sufficient hardness to retard wear and reduce battering of the surface to a minimum without affecting the toughness and shock resistance of the core metal.

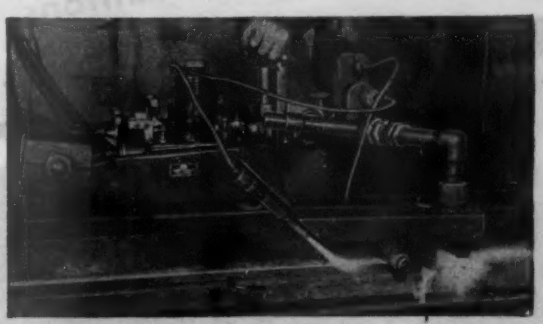
The actual mechanical application of Airco's Simultaneous Flame Hardening and Tempering is simple, speedy, and economical. The most practical method is to immerse each of the component parts of the frog almost completely in a tank containing a soluble oil solution. An Airco No. 4 Radiagraph machine, equipped with quenching jet and torches for heating and tempering, travels at a regulated speed on a track alongside the tank. Thus, in a single progressive operation the frog wearing surfaces are flame hardened and tempered.

Air Reduction's Railroad Engineering Service Division will provide complete information and technical assistance on this application of the oxyacetylene flame. For full details write to Department RA, New York office.

★BUY UNITED STATES WAR BONDS★



This view of an assembled frog shows the areas (chalk-marked) which have been flame hardened.



Close-up of the operation showing the hardening flame, quenching jet and tempering flame.

AIRCO WILSON

AIR REDUCTION

General Offices: 60 EAST 42nd STREET, NEW YORK 17, N. Y.

In Texas: MAGNOLIA AIRCO GAS PRODUCTS CO. • General Offices: HOUSTON 1, TEXAS

Offices in all Principal Cities

THE RAILS' TWO-OCEAN NAVY

You've heard a lot about America's great two-ocean Navy and you know its stirring record, from doughty PT-boat to mighty battlewagon, in the fight against world tyrants.

But give out a bold chantey, mates, for another two-ocean Navy that sounded "general quarters" long before Pearl Harbor and has served with gallantry and distinction ever since—

We mean the fleet that is the railroads' own—the hundreds of tugs, carfloats, and barges that are carrying vital war cargoes across water gaps where there are no bridges or tunnels to make steel tracks meet.

In busy New York harbor, in San Francisco Bay or Puget Sound, they're plying right this minute—yes, as you read this—with raw materials for airplane plants and munitions works, with clothing or food or guns bound for men who fight for Uncle Sam half-a-world away.

You'd hardly believe the way one of those tugs can bully a pair of giant carfloats, each with a score of bulging carloads of freight strapped to its back, through thickest fog and black of night, winter and summer, fair weather and foul.

Why, seasoned old skippers of the rail marine service in New York harbor have told me of nights when they had to chop ice from cold steel decks before rolling cars aboard for the tough haul to the Jersey shore. They've battled blinding snowstorms when you could hardly make a tie-line fast, and seen gales rip the same lines to shreds.

'Round Manhattan's tip ride the fleets of the New Haven and New York Central, the Erie, the Pennsylvania, the Lackawanna, the Baltimore and Ohio, the Lehigh Valley, the Central of New Jersey. Under San Francisco's towering bridges churn the navies of the Santa Fe and Western Pacific; in Puget Sound the big floats are used by the lines of the Northwest.

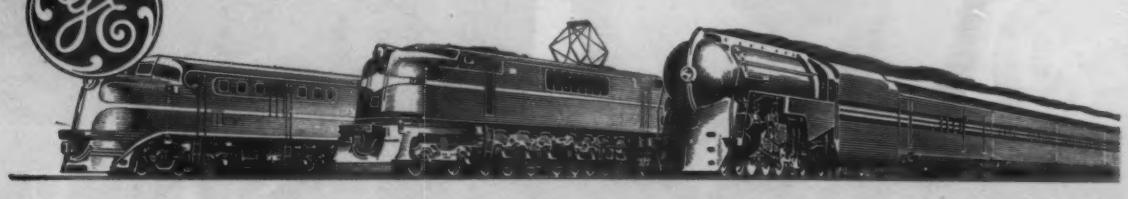
Railroaders who would hardly know a belayin' pin from a bo'sun's whistle can be proud of this marine side of their business. Cinder and saltwater railmen alike are giving their best in this war.

*—The Trackwalker**

★ ★ ★

On one road 4 Alco-G.E. diesel-electric road-switchers are doing the work of 7 steamers because of their high "utilization-ability." Not only are they available 97 per cent of the time, they are versatile enough to be used 97 per cent of the time—in switching, accumulating trains, and hauling them on the road.

Alco GE



AMERICAN LOCOMOTIVE • GENERAL ELECTRIC

Copr., 1944, American Locomotive Company and General Electric Company **Reg. U.S. Pat. Off.* 113-80-8560

Keep your Freight Cars

They meet the needs of wartime freight service

THEY ARE SAFER. That's important today when high speeds and heavy loads are wartime musts. Everywhere these wheels have been adopted, derailments and delays due to wheels have been sharply reduced.

THEY COST LESS. On a basis of cost per thousand miles, U·S·S One-Wear Wrought Steel Wheels average substantially less than the cost of freight-car wheels of other materials.

THEY IMPROVE SERVICE. Wheel changes are always a bugbear, especially on interchange. They cost time and they cost money. They take cars out of service. These wheels stay in serviceable condition longer, keep cars off the repair track.

★ ★ ★

The heavier loads now carried, the greater distances traveled, and the fast speed at which freight must move today, put a premium on freight wheel safety. To stand up, wheels must have the ability to endure heavy brake action and impact at high speeds. U·S·S One-Wear Wrought Steel Wheels meet all these requirements.

UNITED

on the Fighting Line...

Change over to U·S·S ONE-WEAR WROUGHT STEEL WHEELS

DON'T let wheel defects hamstring our drive toward victory. You can reduce this prime cause for car failures to a minimum by using U·S·S One-Wear Wrought Steel Wheels.

At the present time it is estimated that approximately 70% of the railroads' freight traffic is directly or indirectly identified with the war effort.

The months ahead promise to be the most critical of the war. Your cars will have to be ready to roll—to roll fast, and for long hauls with heavy vital loads of war materials. Cars hospitalized for wheel defects won't help much in meeting this situation.

U·S·S One-Wear Wrought Steel Wheels under 50/55-ton service average 200,000 miles. Under 70-ton service, 160,000. And that's conservative. Some of these wheels have actually run more than 400,000 miles, many have gone well over the 300,000-mile mark. Such long, safe mileage was never more important than right now.

Today, some 3,200,000 Wrought Steel Wheels are used in freight service. More than 80% of all 70-ton freight cars are equipped with them. Here's assurance of their ability to stand up under exacting conditions.

If you want your freight equipment to deliver the goods, not only in the immediate future but in the strenuous service that after-the-war competition will demand, change over to U·S·S One-Wear Wrought Steel Wheels, now. We will gladly supply you with all needed information.

CARNEGIE-ILLINOIS STEEL CORPORATION

Pittsburgh and Chicago

Columbia Steel Company, San Francisco, *Pacific Coast Distributors* · United States Steel Export Company, New York

USS

STATES STEEL

HOW WESTINGHOUSE SERVES THE TRANSPORTATION INDUSTRY

"life-line" protection

with interference—free R-I-P insulators

Pin-type insulators for primary distribution circuit support. Wet and dry arcing distances vary from 1" to 4½", depending upon model used. The light glaze means R-I-P (Radio-Interference-Proof).

No arcing across air gaps. R-I-P glaze overcomes radio interference by eliminating overstressed air gaps at tie-wire and in the pinhole.

Signaling is the "life-line" of modern transportation, and every precaution must be taken to assure dependable distribution lines that carry clear and legible signals.

As the result of railway electrification demands in 1928, Westinghouse developed the first high-strength insulator . . . increasing load limits of suspension insulators to 25,000 and 36,000 pounds. One of the greatest handicaps yet to overcome, however, was the interference created by "noise generation" of insulators supporting signal wires.

Extended Westinghouse research and development overcame this problem in 1930 when it presented the industry with R-I-P* insulators . . . solving the radio reception problems caused by the usual arcing flow of capacity currents between conductor and insulator surfaces . . . without increasing the cost of distribution lines.

Westinghouse insulators offer greater safety and stability to signal power systems and provide greater resistance to mechanical abuse.

Enjoy the benefits of 25 years of practical porcelain experience. Ask your nearest Westinghouse office for complete information on Westinghouse insulators. Or write Westinghouse Electric & Manufacturing Company, P. O. Box 868, Pittsburgh 30, Pa. J-15091

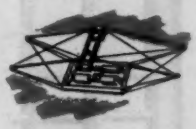
*Radio-Interference-Proof . . . another Westinghouse development . . . now an industry standard.

Westinghouse INSULATORS

PLANTS IN 25 CITIES . . . OFFICES EVERYWHERE

Train Talk

NEWS AND VIEWS ON ELECTRICAL EQUIPMENT
...FOR TRAIN, TRACK AND TERMINAL



1895 marked the first overhead trolley installation for electrical traction on the 7-mile New Haven Nantasket Branch. Today's catenary consists of cross and longitudinal wires and cables which hold the charged trolley wire firmly at a uniform elevation for proper contact with the pantograph . . . a current-collecting device for electric locomotives and passenger cars . . . developed and manufactured by Westinghouse.

Write today for your personal copy of booklet B-3353 . . . and learn all the facts about the new Flexarc ACP welding electrode . . . the most important development in the past ten years . . . operates on a-c or d-c reverse polarity. ACP will step up welding production and quality of welds—economically. Earmark this announcement for immediate investigation.

"Slug" and automatic two-rate charging of passenger car batteries call for Westinghouse Rectox battery chargers. The latest design features rating of 40/80 volts and can operate at 60/120 volts at rectifier. It's portable and speedy . . . and both practical and streamlined in design and operation. Your near-by Westinghouse Transportation Engineer will be glad to acquaint you with the merits of the new Rectox Charger.

A recently developed solid coupling for Diesel locomotives replaces the flexible coupling on type 181-L and 181-L2 generators. See the new improved design . . . it's sturdier and is entirely interchangeable with previous flexible couplings. For better product performance, make your next order read solid couplings.

Are you interested in the latest developments in electrical equipment for railroad passenger cars? Lighting, air cleaning and water coolers are but three of the subjects reviewed in the Prospectus dated June 25, 1944. For further particulars or literature descriptive of any of the products mentioned in this and other Train Talks, call your nearest Westinghouse office. If you prefer, write to Westinghouse Electric & Manufacturing Company, P. O. Box 868, Pittsburgh 30, Pa.

Westinghouse ELECTRICAL EQUIPMENT FOR TRAIN, TRACK, TERMINAL

PLANTS IN 25 CITIES... OFFICES EVERYWHERE

X-RAY of a HEALTHY CHEST

X-RAY VIEW of a SOUND BATTERY

While we do not X-ray storage batteries, we know they were "born" healthy if they are Gould.

Suppose you could make an X-ray of a Gould battery.

You would see special Gould features, developed through half a century of experience and research... for example, the Kathanode grid with its reinforced box-type structure locking the active material in place. This material, known as Gould Black Oxide, has a regenerative quality due to the pure lead core in each grain.

You would see each plate protected by spun glass mats of exclusive Gould design. This reduces shedding so that even after long service a minimum of spent active material is deposited in the bottom of the cell.

Gould knows that a well cared for battery is a healthy battery. To assist battery users in the solution of problems, complete Gould Service is available throughout the country.

Write Dept. 58 for Bulletin 100 on Gould Kathanode Glassklad Batteries for Industrial Trucks and Tractors.

GOULD STORAGE BATTERY CORPORATION DEPEW, N. Y.

Factories: Atlanta • Chicago • Dallas • Depew • Leavenworth • Los Angeles • North Bergen • Rock Island St. Paul • Sioux City • Zanesville

FOR EXCELLENCE IN STORAGE BATTERY PRODUCTION AT DEPEW PLANT

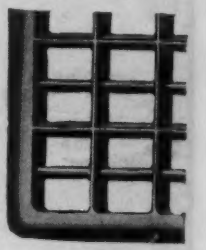
GOULD

Since 1898 THE BATTERY PICKED BY ENGINEERS

THE KATHANODE GRID

One of a series of informative articles for users of industrial batteries

Each battery part is essential to successful, long-life operation. It is vital to have an active material with a full, long life, like Gould's famous Black Oxide. Yet, it is just as vital to pack that material into a grid having an equally long life. Otherwise, the grid would fail before the material.



The scientific method by which Gould grids are made is an example of why Gould batteries last longer. Gould grids are cast from pure antimonial lead carefully alloyed to avoid stresses and strain and to afford maximum rigidity against buckling and to retard plate growth.

The casting operation is performed by modern machines which automatically ladle the molten lead, the temperature of which is thermostatically controlled, into a precision water cooled mold. This close control prevents the formation in the grid structure of blow holes, and thus eliminates accelerated grid deterioration.

To assure perfect grids, an electrically operated device stops the machine and signals the operator should a faulty grid be cast. The finished casting is an ideal grid framework, a sturdy backbone for a sturdy battery.

What are the special features of the Gould positive grid?

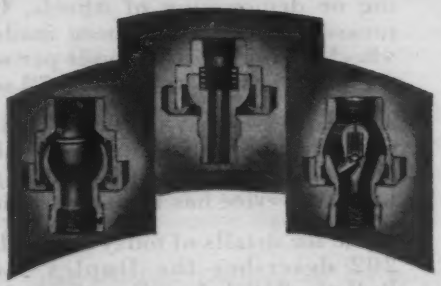
The vertical and horizontal members of the grid are diamond shaped. In addition, vertical members are increased in cross-section as they approach the top of the grid. This assures adequate conductivity.

This diamond, or double wedge design, forms a series of box-like structures which with the addition of a round central horizontal member alternating with the wedge shaped horizontal member makes it impossible for the active material to move in any direction within the box.

In addition, the round member acts as a reinforcing bar and because it is smaller in cross-section than the diamond shaped bars, it is completely imbedded in the active material, safe from peroxidization—certain to maintain its current carrying ability. This point is one of the most important factors in making the Gould positive grid an indestructible conductor.

"Universal" BOTH IN ACTION AND SERVICE

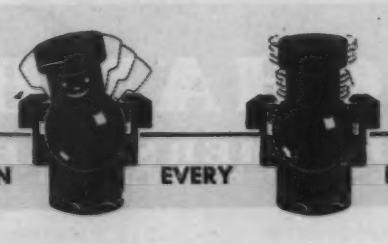
The combined ball-and-swivel action makes this a truly universal joint for fluid-conveying pipes...with movement in every direction. And the consistently satisfactory performance of Barco Flexible Joints in every field of industry and transportation for thirty years past has made them a favorite the world over. Barco Manufacturing Co., Not Inc., 1800 Winnemac Avenue, Chicago 40, Ill.



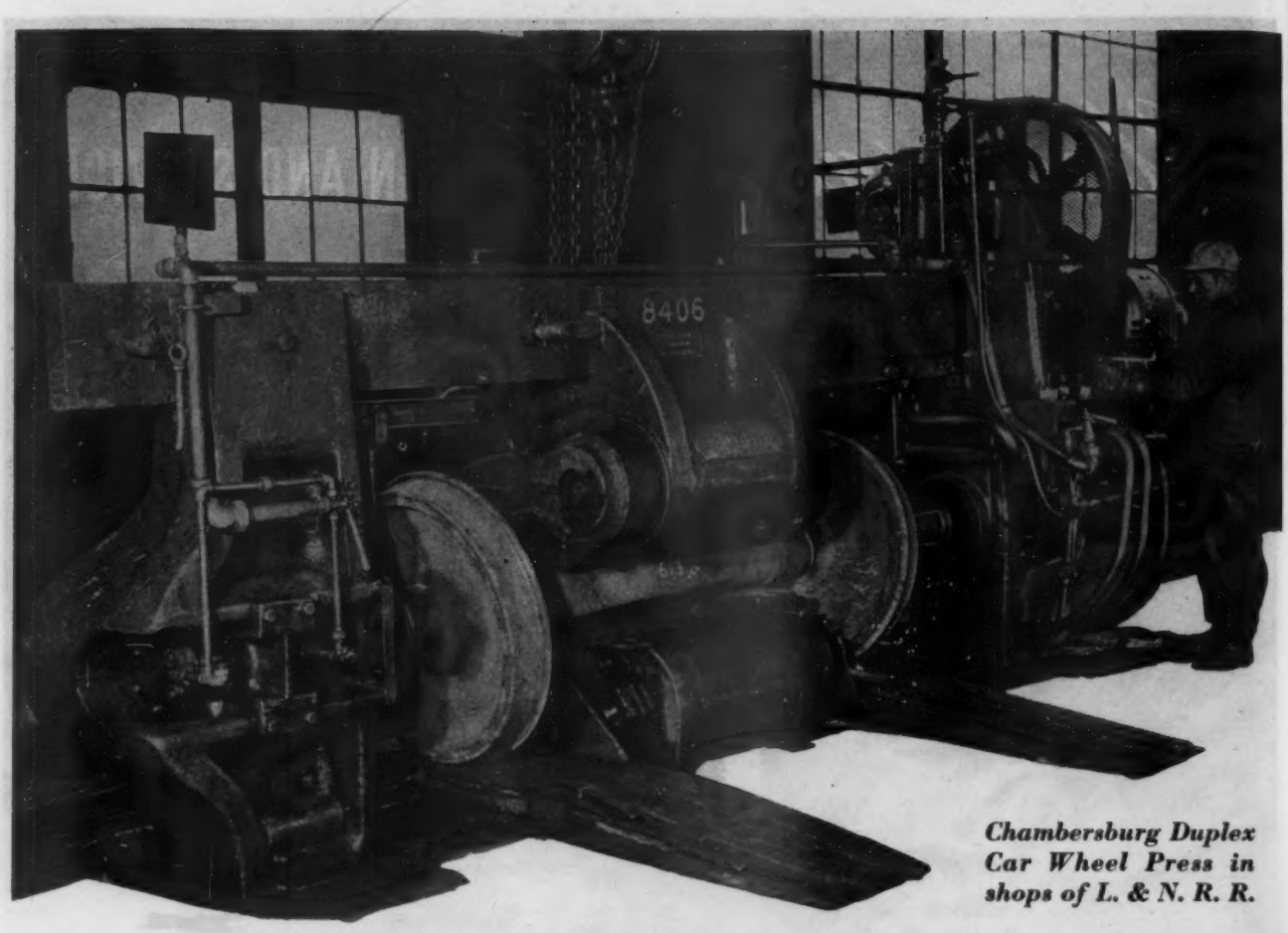
BARCO FLEXIBLE JOINTS

Not just a swivel joint...but a combination of a swivel and ball joint with rotary motion and responsive movement through every angle.

In Canada: The Holden Co., Ltd., Montreal, Canada



"MOVE IN EVERY DIRECTION"



Chambersburg Duplex Car Wheel Press in shops of L. & N. R. R.

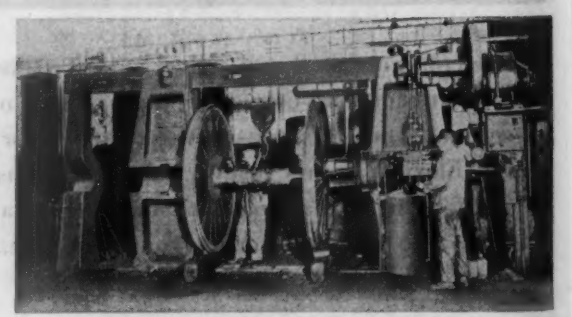
40 Seconds Floor-to-Floor Car Wheel Demounting Time

Seventy-four Seconds per Wheel for Mounting

Chambersburg Wheel Presses have established records in railroad shops all over the country for the speed with which they permit the rapid mounting or demounting of wheels. On the car wheel presses, records have been made for demounting wheels as low as 40 seconds per wheel floor-to-floor —mounting time as rapid as 72 seconds.

These presses have been designed and improved with the needs of the railroad shop constantly in mind—the necessity for speed in getting car wheels back in service has been paramount.

Write for details of today's Wheel Presses. Bulletin 202 describes the Duplex Car Wheel Press. Bulletin 212-1 describes the Driving Wheel Press.



Chambersburg Vertical Driving Wheel Press

CHAMBERSBURG ENGINEERING CO., CHAMBERSBURG, PA.

ARMY E NAVY

CHAMBERSBURG

HAMMERS · CECOSTAMPS · PRESSES

SPECIFY THESE BRIGGS *Fuel Oil* FILTERS

for Diesel Engines consuming less than 10 gallons per hour—

MODEL F-5 for maximum fuel consumption of 5 gallons per hour

MODEL F-10 for maximum fuel consumption of 10 gallons per hour

Small compact design permits installation at side of engine. Especially adaptable to mobile Diesels used in trucks, buses, tractors, drag lines, cranes, field pump units, portable and stationary power plant units, marine auxiliaries, etc. Supplied with heavy gauge steel mounting brackets. Simple to install on any engine.

These Briggs Fuel Oil Filters feature the Briggs Patented Molded Fullers Earth Block in combination with fibrous cellulose . . . the filtering combination that CLEANS OIL 3 TIMES IN 3 WAYS.

1. **PHYSICALLY CLEAN**—dirt is removed by ABsorption through cellulose.
2. **CHEMICALLY PURE**—acids, gums, resins, asphalt are removed by ADsorption through Fullers Earth.
3. **VISIBLY CLEAN**—particles as small as 7 microns (.0003") are removed by ABsorption through second layer of cellulose.

Remember—fuel oil leaves the refinery in perfect condition, but it DOES oxidize and become contaminated in storage. Briggs Fuel Oil Clarifiers offer 100% protection against engine shut-down due to contaminated and dirty fuel.

For complete information on these and larger Briggs Fuel Oil Clarifiers see the Briggs distributor in your territory.

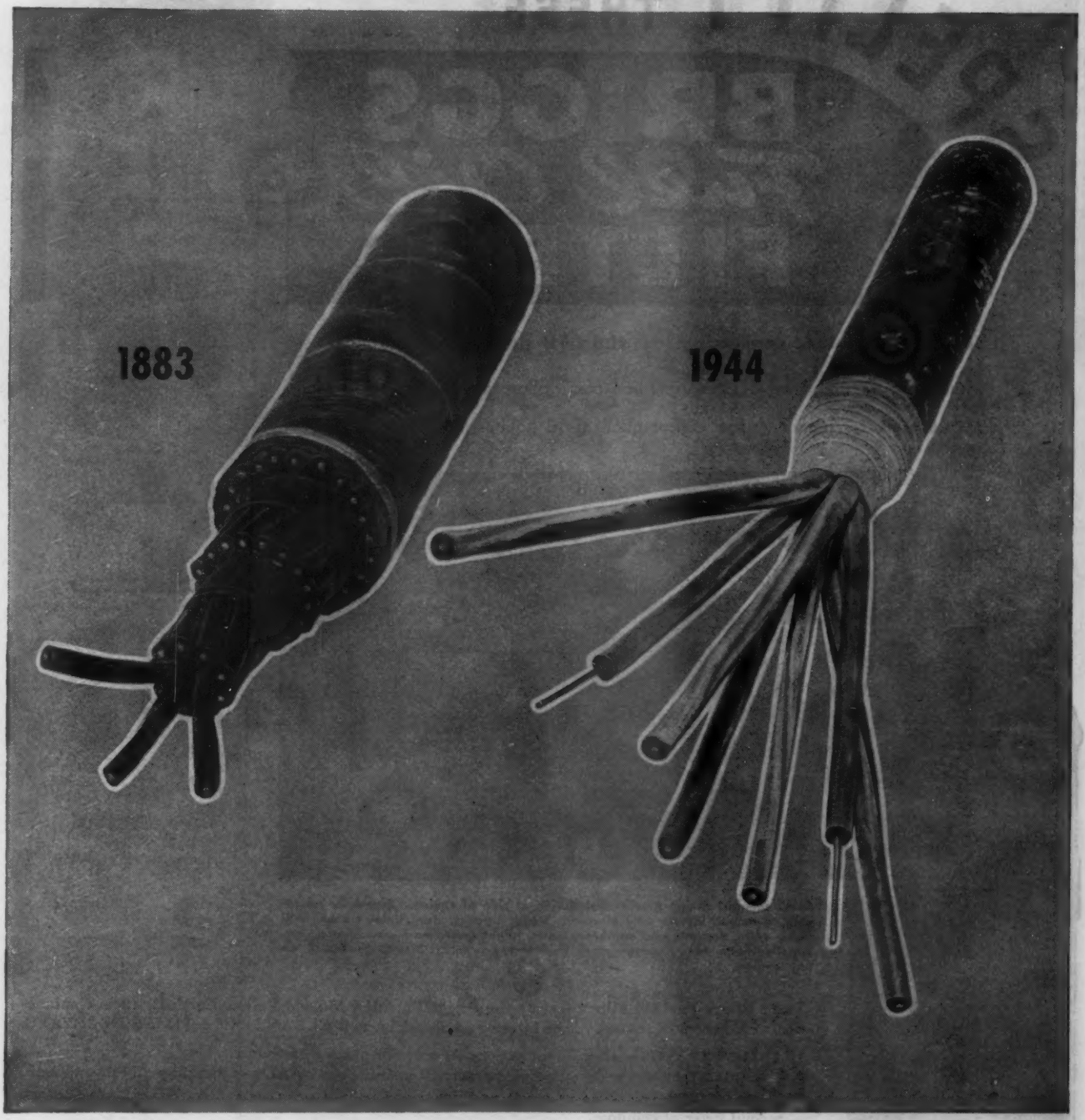
Briggs

PIONEERS IN MODERN OIL FILTRATION

BRIGGS CLARIFIER COMPANY

1339 WISCONSIN AVE., N. W., WASHINGTON 7, D. C. • DISTRIBUTORS IN PRINCIPAL CITIES

Pioneers in Cable Engineering



The use of **PLAIN INSULATED CONDUCTORS** in multi-conductor signal and control cable presents many advantages in design and installation practice.

KERITE CABLES of this construction have a successful operating background of over **SIXTY YEARS** both underground and overhead.

THE KERITE INSULATED WIRE & CABLE COMPANY INC

NEW YORK CHICAGO SAN FRANCISCO

CE

Augu

ontrol
actice.
round

RAILWAY AGE

Save Rail Wear *with* The Fair

The IMPROVED FAIR, because of its dependable holding qualities, saves rail wear, as it maintains perfect track alignment.

THE P & M CO.

CHICAGO · NEW YORK · DENVER · CLEVELAND · ST. LOUIS
WASHINGTON · SAN FRANCISCO · ST. PAUL · BOSTON

Lighter - Stronger - Better

Since the first Schaefer Loop Hanger went into service more than 20 years ago, there have been no adverse reports on their performance.

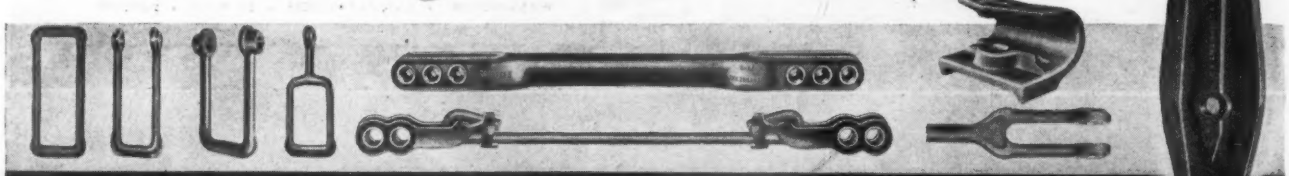
STANDARD ON MOST ROADS

Schaefer Light Weight Design Insures More Than Car Life

When your freight car repair program is under consideration you can be certain that Schaefer Service will meet your delivery requirements.

Schaefer EQUIPMENT COMPANY

KOPPERS BUILDING • PITTSBURGH, PA.



LOOP, "U" AND STIRRUP TYPE BRAKE BEAM HANGERS ... TRUCK, CYLINDER AND FLOATING LEVERS
TRUCK LEVER CONNECTIONS ... BRAKE ROD JAWS ... WEAR PLATES ... BRAKE SHOE KEYS

Oxweld's Flame-Straightening Saves Track and Equipment

● Flame-straightening of worn joint bars in track is an effective and economical method of restoring sagging joints to a more nearly true riding surface. When used in connection with a program of building up battered rail ends, oxy-acetylene flame-straightening materially reduces the amount of welding rod required.

Two operators can flame-straighten joint bars, working simultaneously on opposite sides. Or, by using the semimechanized method developed by Oxweld, a single operator is able to do this work as shown above. After the joint bars are heated, the resulting contraction straightens the bar and fills in the wear under the rail head.

Any Oxweld representative will be glad to give you information about flame-straightening and other oxy-acetylene procedures for maintaining track.

BUY UNITED STATES WAR BONDS AND STAMPS

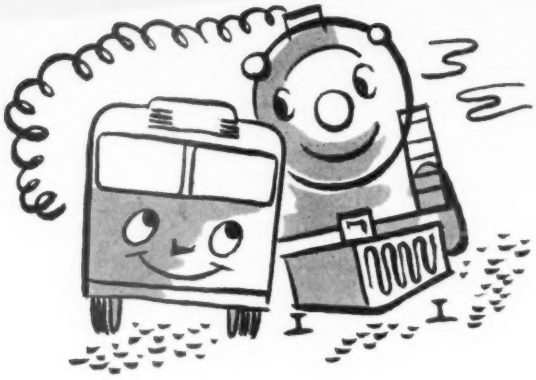
THE OXWELD RAILROAD SERVICE COMPANY
Unit of Union Carbide and Carbon Corporation
UCC
Carbide and Carbon Building Chicago and New York

OXWELD RAILROAD SERVICE

SINCE 1912 THE COMPLETE OXY-ACETYLENE SERVICE FOR AMERICAN RAILROADS

a HEADACHE can be turned into a GOLD MINE

BACK in the turbulent Twenties, when the bus first became a factor in short haul passenger transportation, the railroads regarded this new competition with misgivings – and with reason. A tremendous investment in plant and rolling stock was apparently jeopardized, customers lost, profits threatened.



THE experience of the past twenty years has shown however that the railroads and buses not only can *live* together—they can mutually and *profitably* complement each other! Buses operating as feeders have turned in imposing revenue for the railroads. As replacements for unprofitable passenger services on branch lines, modern railroad-operated buses have captured volume business which "two-a-day" trains could neither develop nor service.

RAILROAD men have long appreciated the importance of eye-appeal and comfort in stimulating patronage. They know too that they must have prime quality and dependability in bus performance to make the investment pay.

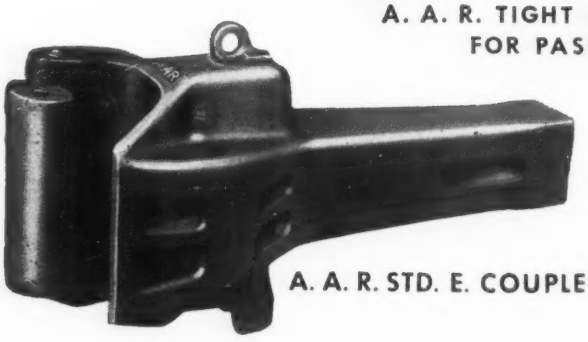
BECAUSE a.c.f. BUSES KEEP RUNNING LONGER— ***they're the buses to run!***

the a.c.f. motors company

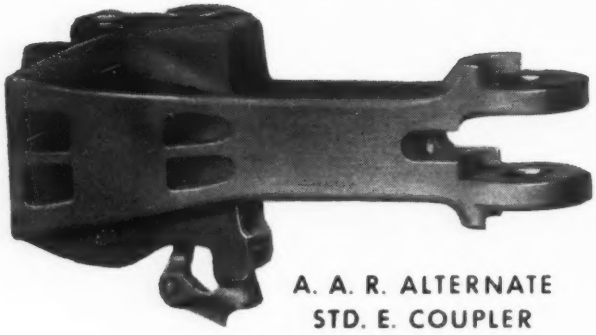
a.c.f. buses have bred into them *top passenger appeal* and *economy of operation and maintenance* to the highest degree. The a.c.f. bus maintenance story, alone — a story written daily in extra miles for fewer dollars and cents on countless highways—well warrants the most serious consideration of every railroad contemplating the extension of present facilities with bus service.

A DIVISION OF THE BRILL CORPORATION, PHILADELPHIA, PENNSYLVANIA

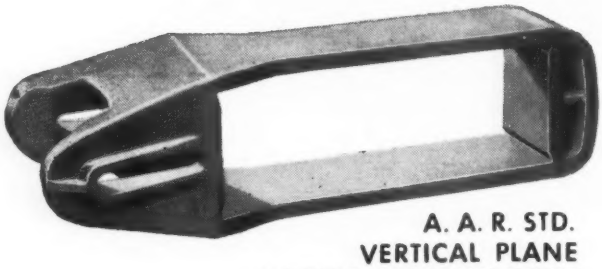
A. A. R. TIGHT LOCK COUPLER & YOKE
FOR PASSENGER SERVICE



A. A. R. STD. E. COUPLER



A. A. R. ALTERNATE
STD. E. COUPLER



A. A. R. STD.
VERTICAL PLANE
HORIZONTAL KEY YOKE

A. A. R. ALTERNATE STD.
VERTICAL PLANE SWIVEL YOKE

M&S Co.

National

since 1875 has been making castings for railroad equipment.
Today the National line of railroad devices includes:

A. A. R. STANDARD E COUPLERS

A. A. R. TIGHT LOCK COUPLERS

ENGINE COUPLER POCKETS

A. A. R. CERTIFIED DRAFT GEARS

A. A. R. DRAFT YOKES

A. A. R. TYPE JOURNAL BOXES AND LIDS

ISOTHERMOS JOURNAL BOXES

WHEELS

TRUCKS, SIDE FRAMES, BOLSTERS, ETC.

NATIONAL MALLEABLE AND STEEL CASTINGS CO.

General Offices: CLEVELAND, OHIO

Sales Offices: New York, Philadelphia, Chicago, St. Louis, San Francisco.
Works: Cleveland, Chicago, Indianapolis, Sharon, Pa., Melrose Park, Ill.

Assuring *Free and Easy* traverse for a TANK TURRET

Accurate finishing in a fully equipped and highly modern machine shop (a good example of its facilities is the 20′ vertical boring mill above) is only one of the advantages PSF offers to users of steel castings. Back of that is long experience and advanced technique in everything from melting to heat treating, and the ability to handle any size or shape in carbon, alloy or armor steel. Let us work with you on your plans.

WAD 9382

46 YEARS OF STEEL CASTING KNOWLEDGE

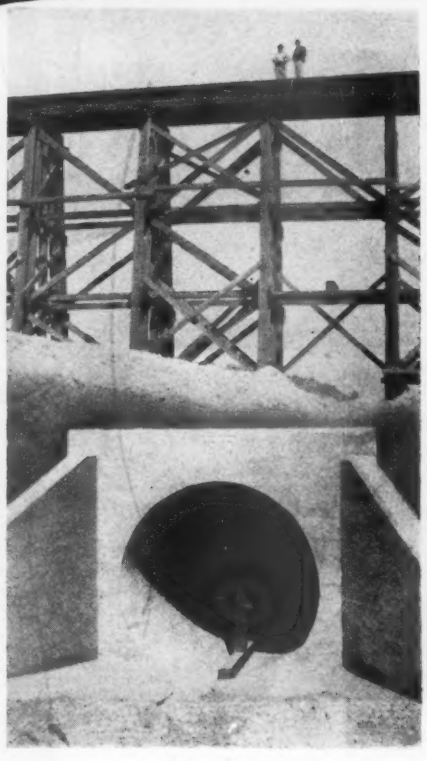
Pittsburgh

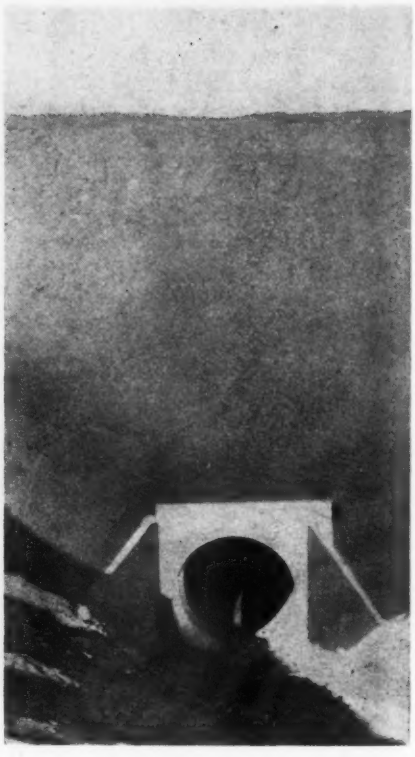
STEEL FOUNDRY CORPORATION

GLASSPORT, PA.

Sales Offices: NEW YORK • PHILADELPHIA • WASHINGTON AND CHICAGO

You can plan ahead now to Cut Bridge Maintenance





Many railroad purchasing men know why ARMCO Multi Plate is the simple, practical answer to excessive bridge repairs. They hear about it from maintenance men all the time. It is easy to install and the regular crew can do the work quickly in any season. No special equipment is needed and traffic is not interrupted.

The rugged, though easily-handled Multi Plate sections are shipped in convenient knocked-down form, ready for immediate assembly. Just bolt them together, backfill, and the job is done.

Multi Plate will give you many years of service without maintenance. Galvanized ARMCO Ingot Iron insures durability, and the large corrugations are designed to withstand heavy loads and impact. All fire hazards are completely eliminated.

Plan now to banish recurring maintenance by replacing bridges or relining old structures with ARMCO Multi Plate when it is again available. Our nearest office will give you complete information—or you can write direct to Armco Railroad Sales Co. Incorporated, 281 Curtis Street, Middletown, Ohio.

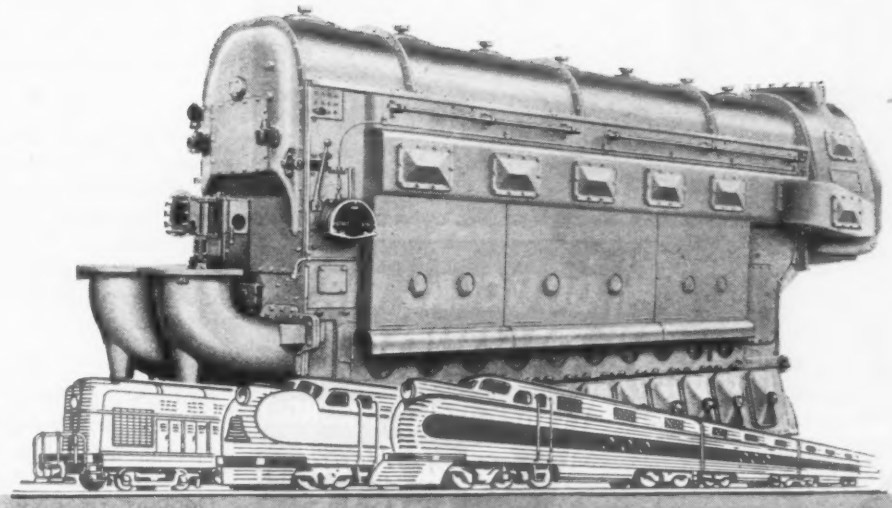
EXPORT: THE ARMCO INTERNATIONAL CORPORATION

Armco Multi Plate*

MULTI ARMCO PLATE

*A PRODUCT ORIGINATED AND DEVELOPED BY ARMCO ENGINEERS

A *Locomotive* Diesel Went to Sea



DESIGNED for locomotive service, yet used by the thousands as marine engines, the Fairbanks-Morse Opposed-piston Diesel is making ready to come ashore again.

Submarines and locomotives make similar demands on their engines. Both demand great power, compactness, heavy-duty construction, dependability, and easy, quick serviceability.

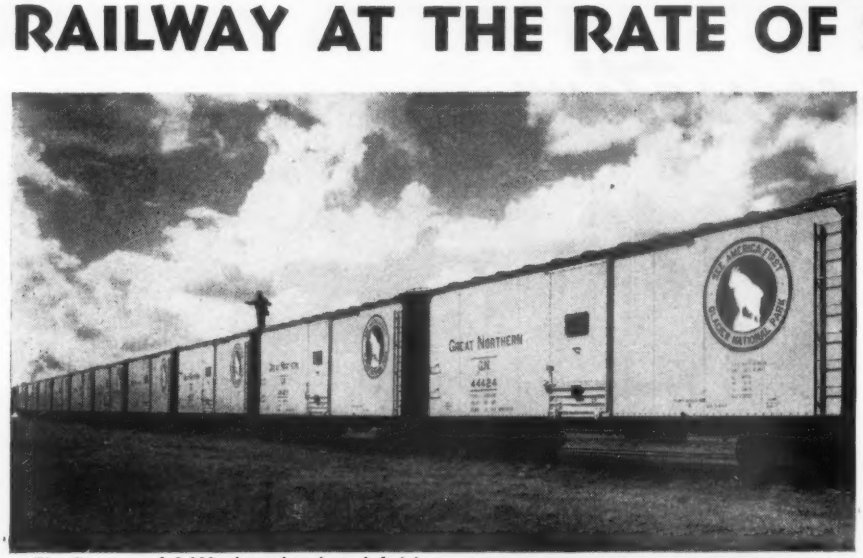
That's why it is significant to railroad men that the Navy uses more than two million horsepower of these Diesels.

Fairbanks, Morse & Co., Fairbanks-Morse Building, Chicago 5, Illinois.

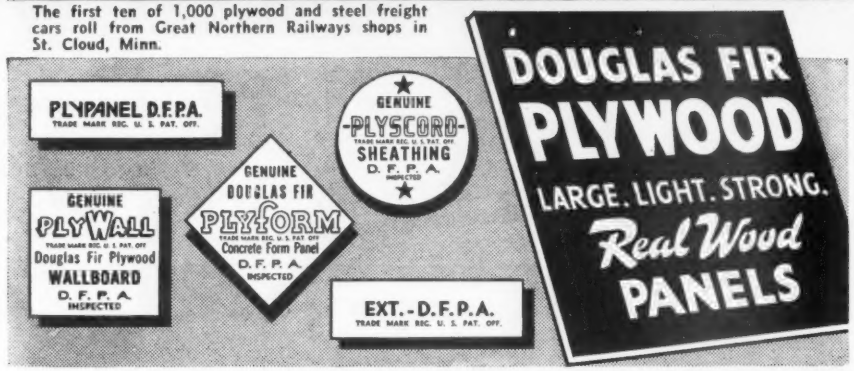
A name worth remembering!

FAIRBANKS-MORSE

1,000 PLYWOOD BOXCARS BUILT BY THE GREAT NORTHERN RAILWAY AT THE RATE OF SIX PER DAY!



The first ten of 1,000 plywood and steel freight cars roll from Great Northern Railways shops in St. Cloud, Minn.



Thoroughly tested for strength and rigidity before actual production started, Douglas fir plywood proved its qualities to Great Northern officials—and was used for inside and outside sheathing on 1,000 new freight cars which are two tons lighter, on the average, than the conventional car.

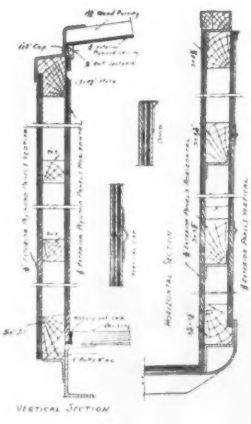
•

Exterior-type Douglas fir plywood (made with completely waterproof binder) was specified throughout. Outside panels, placed horizontally, are 5/8" thick, and the ceiling panels are of 5/16" Douglas fir plywood.

•

Not only are the finished cars lighter in weight, durable, strong, and able to take it—but were built faster because Douglas fir plywood is available in large, economical panels.

SPECIFY DOUGLAS FIR PLYWOOD BY THESE "GRADE TRADE-MARKS"



Cross section detail of the Great Northern plywood-steel boxcars showing particularly the use of plywood for inside and outside sheathings and for the doors and ceiling as well.

The full story of these new Great Northern cars will interest you—as will the advantages offered by Douglas fir plywood in many fields of railroad construction, modernization and maintenance. Douglas Fir Plywood Association engineers will be happy to furnish you with detailed information concerning plywood's usefulness.

•

Douglas fir plywood is now available only on highest priorities. Application for allocation must be made by suppliers to the war production board.

DOUGLAS FIR PLYWOOD ASSOCIATION
Tacoma 2, Washington

Steel bolts and nails hold plywood panels in place. Horizontal bolting is to lumber stiffeners. Steel strips fit over vertical joints. Panels are four by ten feet so that there are no horizontal joints. Interior panels are installed horizontally.

American Railways are doing a grand job ☆

In doing the magnificent wartime job that the railroads have done, railway equipment has been subjected to the most grueling test. The strain of the emergency has taken its toll ...war-weary equipment now faithfully serving its country must be replaced to provide transportation in keeping with the trends of tomorrow.

An increasing volume of travelers, who have patriotically refrained from adding to our traffic burden for the duration, will require fleets of new trains that give the full measure of comfort and luxury... when Peace comes.

When men and metal are *mustered out* . . . GoodForm Custom Seating will again provide the peacetime traveler with the zenith of excellence in comfort, distinguished styling and colorful beauty...seating that will be in keeping with every development in the new era of transportation.

The General Fireproofing Company

Youngstown 1, Ohio

SPECIFICATIONS FOR POST-WAR CARS

Two major specifications of post-war passenger equipment about which railroad executives seem to be generally agreed are (1) lightweight and (2) comfort—including air-conditioning, good lighting, and other electrical conveniences.

This raises the question: how to provide the necessary capacity in the electrical systems of the cars with the least weight. An obvious answer is to select lightweight electrical equipment, including alkaline batteries.

An outstanding reason for their lightweight is their high-strength steel cell construction. This, together with their fool-proof electrochemical principle of operation, makes them an *inherently dependable* power supply for the electrical equipment which plays so important a part in passenger comfort.

They also have a record of many years of successful operation with 64-volt and 110-volt systems as well as 32-volt systems. *Edison Storage Battery Division of Thomas A. Edison, Inc., West Orange, New Jersey.*

Edison
THE LIGHTWEIGHT BATTERY
FOR LIGHTWEIGHT CARS

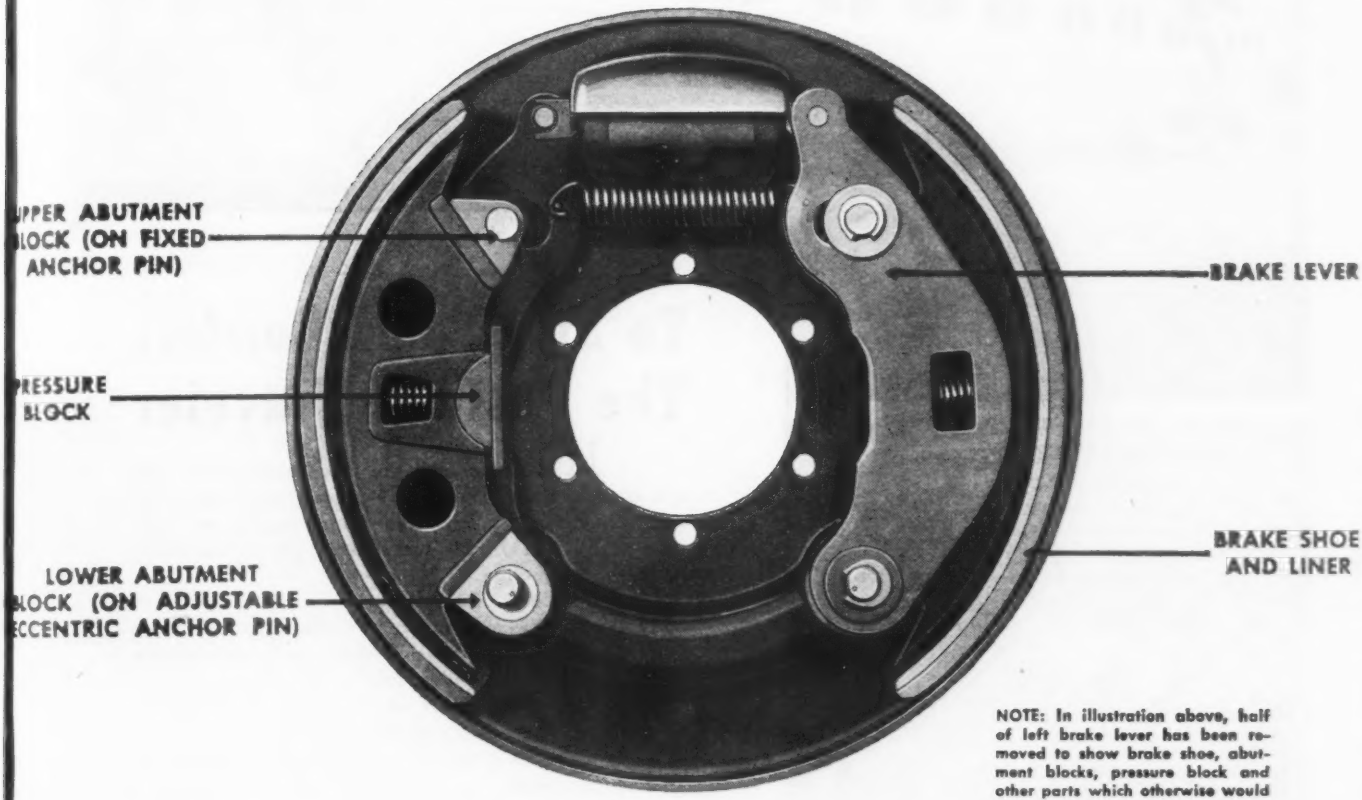
The electrical system of this modern streamlined car provides power for air-conditioning equipment, ample lighting, and a variety of electrical equipment in the kitchen, all of which, taken together, play an important part in passenger comfort, and emphasize the desirability of lightweight, dependable storage batteries. Post-war cars, too, are expected to make extensive use of electric power.

The new

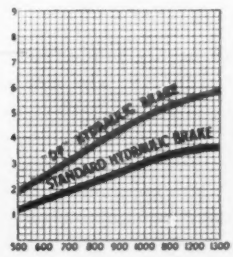
TIMKEN "DP" BRAKE

DUAL PRIMARY

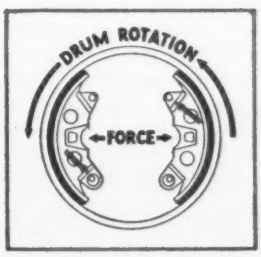
medium duty series for hydraulic actuation

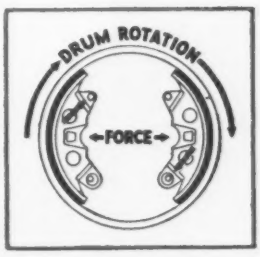

UPPER ABUTMENT BLOCK (ON FIXED ANCHOR PIN)
PRESSURE BLOCK
LOWER ABUTMENT BLOCK (ON ADJUSTABLE ECCENTRIC ANCHOR PIN)
BRAKE LEVER
BRAKE SHOE AND LINER

NOTE: In illustration above, half of left brake lever has been removed to show brake shoe, abutment blocks, pressure block and other parts which otherwise would be concealed from view.

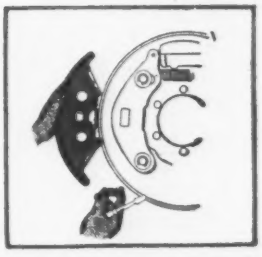


30% to 35% greater braking ability at all hydraulic line pressures.





Both shoes are equally self-energizing, regardless of direction of drum rotation.



Shoes can be removed in a few seconds, with just a screwdriver.

Greater braking ability . . . longer liner life . . . complete driver control . . . utmost simplicity . . . equal effectiveness in forward or reverse . . . these and other features of the new Timken "DP" Brakes fully meet today's needs for the improved brake performance demanded by heavier loads and faster schedules.

Timken "DP" Brakes are available now on certain vehicles being produced in 1944. Write for descriptive folder — see how perfectly these modern brakes meet YOUR needs!

38 YEARS OF AXLE ENGINEERING LEADERSHIP

TIMKEN AXLES

THE TIMKEN-DETROIT AXLE COMPANY, DETROIT 32, MICHIGAN

WISCONSIN AXLE DIVISION • OSHKOSH, WISCONSIN

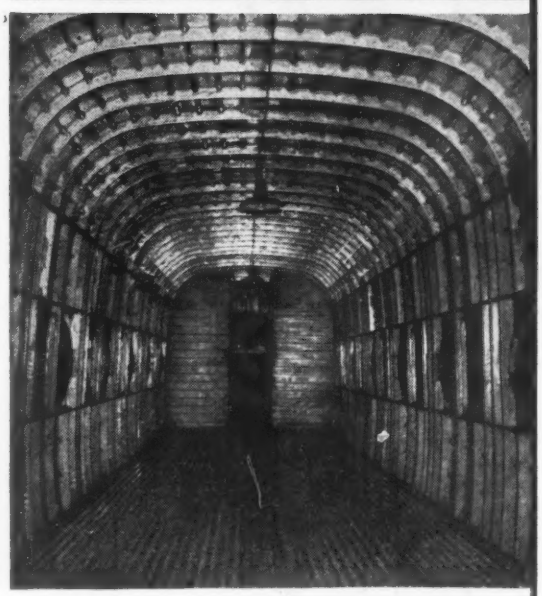
To Speed and Comfort The Postwar Traveler

HERE is one of the new coaches that will win friends for the railroads -- streamlined for speed and trimness, specially designed for comfort and easy riding, and Yoloy built for lighter weight, stronger, tougher construction.

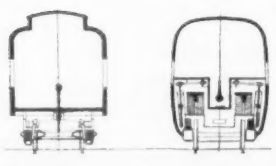
The body center of gravity is lower and the point of body support higher than in the old style cars, thus permitting these newly designed coaches to ride bumps and curves without road shock or end thrust. One of these revolutionary, newly designed cars is in service on each of three western railroads.

Yoloy is a nickel-copper steel which possesses, in addition to greater tensile strength and yield point, a high degree of corrosion resistance. Because Yoloy retains its impact resistance at low temperatures, it can be used safely in all climates.

No critical materials are used in the production of Yoloy as the necessary component alloys are secured from specially selected scrap. Yoloy is available now and your inquiry will receive immediate attention.



This sectional view of the internal body construction of this new car details the original and unique design which combines the maximum of sturdy strength with light weight.



Left—Old-style car, with high gravity center and low rotation center, sways and bumps on rough roadbeds.

Right—The new coach, with low center of gravity and high center of rotation, is "jounceless".

YOUNGSTOWN
THE YOUNGSTOWN SHEET AND TUBE COMPANY
YOUNGSTOWN, OHIO
Manufacturers of
CARBON - ALLOY AND YOLOY STEELS

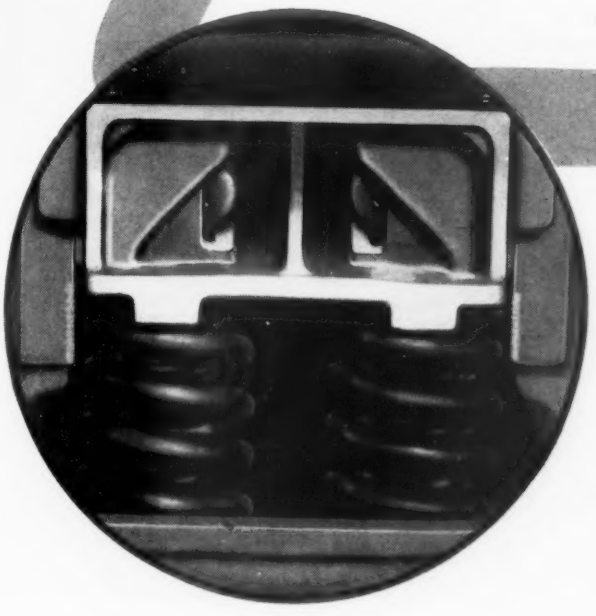
Pipe and Tubular Products - Sheets - Plates - Conduit - Bars - Coke Tin Plate - Electrolytic Tin Plate - Rods - Wire - Nails - Tie Plates and Spikes.

THE TRUCK FOR TODAY'S NEED . . . TOMORROW'S SPEED!

AS FREIGHT SPEEDS MOUNT

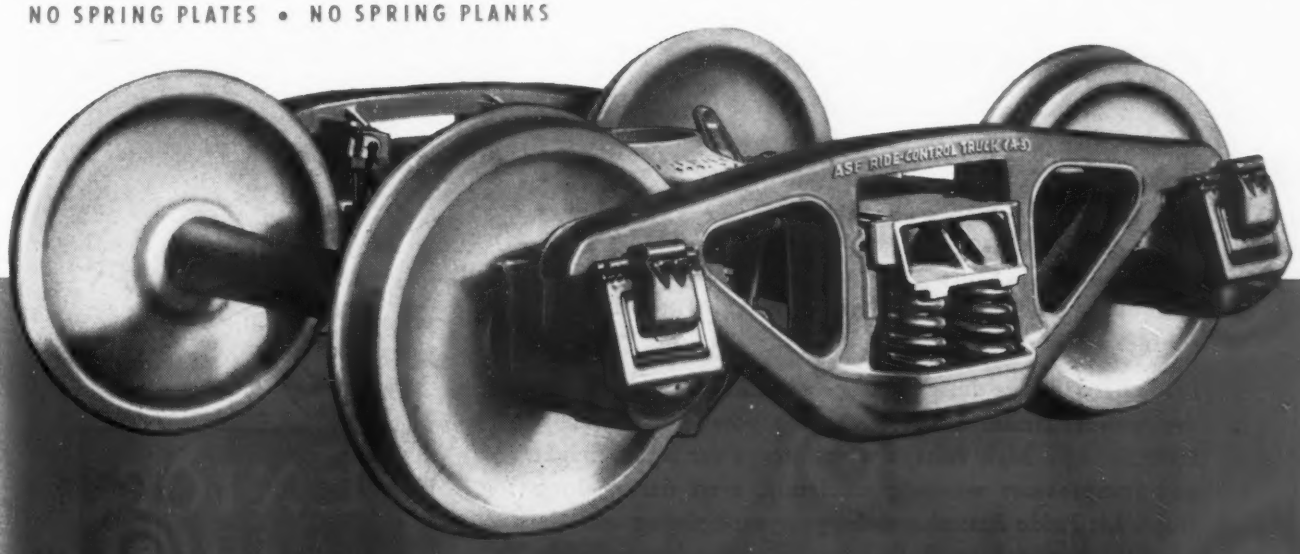
Ride-Control

Starts to Count!



When used with long-travel coil springs, the A.S.F. Ride-Control Truck (A-3) is a high-speed freight-car truck. And because it makes possible material increases in efficient train speeds, the cars under which this truck is used can carry more revenue tonnage in any given period. Increased speeds provide faster overall schedules, hence, service at lower unit cost . . . the measure of true operating economy.

NO SPRING PLATES • NO SPRING PLANKS



AMERICAN STEEL FOUNDRIES

CHICAGO

MINT—MARK OF TIME CAST STEEL

Exide Batteries stand up under wartime strain...

The normal problem of maintaining strong car lighting along with good air conditioning, during the summer months, has been magnified many times by the tremendous increase in wartime travel. More passengers . . . more strain on equipment . . . shortage of labor . . . all amplify the need for a dependable battery that will give the longest life with a minimum of maintenance.

Exide Batteries are designed to give maximum output under the greatest strain. They handle big power loads easily, maintaining a high voltage which keeps car lights bright and compressors working efficiently, even during long stops. Let Exide Batteries make your car-lighting and air-conditioning problem lighter. For when you buy an Exide, you *Buy to Last.* Take care of it and *Save to Win.*

ARMY E NAVY

Exide
BATTERIES

THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia 32
Exide Batteries of Canada, Limited, Toronto

MERITS OF ALLEGHENY METAL

- ★ Great strength, retained at extremes of heat and cold.
- ★ Tough and impact-resistant.
- ★ Favorable strength-weight ratio.
- ★ Highly corrosion-resistant.
- ★ Inherent, lasting beauty.
- ★ Easy to form and weld.

STAINLESS STEEL diesel-electric streamliners aren't drawing-board dreams. They're tangible, self-proved successes with a ten-year operating record from coast to coast—and from war's end on, they're due to go places in earnest.

Why? Because these stainless speedsters have demonstrated—in good black ink on the books—their ability to slash expenses, attract customers and boost income, and you can't beat that for a success formula.

It is a formula, what's more, that applies clear across the transportation field. The same qualities in Allegheny Metal that the railroads value are of equal advantage to the builders of buses, truck trailers, airplanes and ships. It all comes back to the tremendous strength of the steel—*insured* strength, protected by Allegheny Metal's high resistance to corrosion and complete uniformity . . . to its lustrous beauty, requiring no other finish or consequent refinishing . . . and to its ease of welding and fabricating.

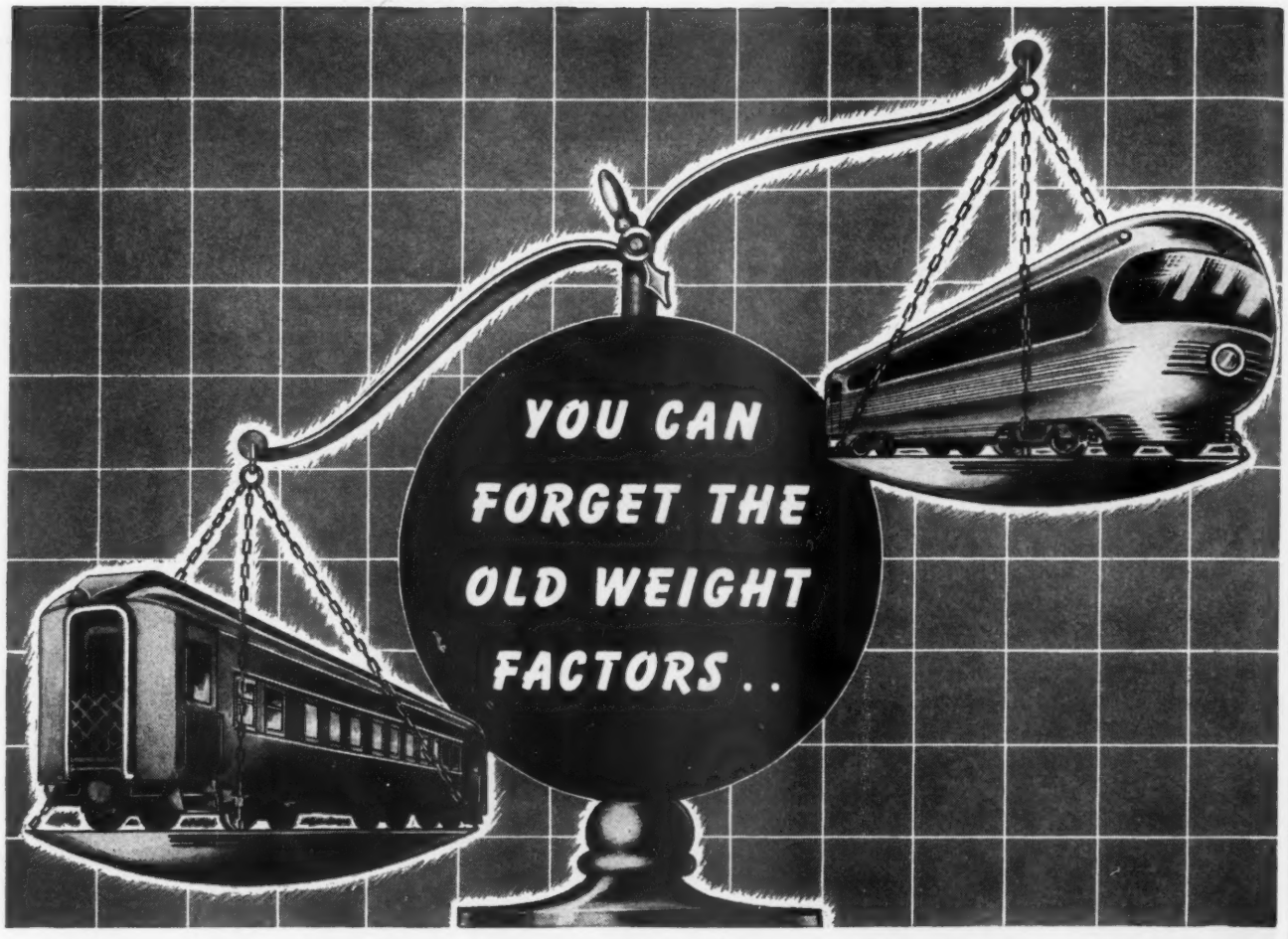
Anywhere that these properties can be put to work, we stand ready to supply every assistance. Allegheny Ludlum Steel Corporation, Brackenridge, Pa.

Allegheny Metal is also handled and stocked by all Joseph T. Ryerson & Son, Inc. warehouses

ALLEGHENY METAL
The Time-Tested Stainless Steel

W&D . . . 9462 B

REMEMBER THE NAME TODAY FOR THE NEEDS OF TOMORROW



in your Air Conditioning Equipment of *TOMORROW*

A TON IS A TON in any language. And when you can slice *important* tonnage off your passenger car air conditioning equipment, it means a greater proportion of fuel is being used to haul *profitable pay loads*—instead of costly dead weight.

And that's where Sturtevant engineering skill and *savvy* come into the picture. They know your eyes are seeing ahead to the *practical* goals of passenger cars that set new records for lightness . . . speed . . . comfort . . . safety . . . strength and operating economy. Their eyes, too, were fixed on these goals when they designed the new air conditioning equipment!

Take the new Sturtevant Compressor-Condenser Unit—total weight is less than 1900 pounds! The compressor itself scales less than 300 pounds—including the flywheel! The new Fan-Evaporator—complete — totals up to under 550 pounds! Similar low-weight advantages are found in Sturtevant's dry surface Condenser Unit and Evaporative Condenser using spray water.

Weight reduction, saving in space requirements, power costs and maintenance are all features of the new Sturtevant air conditioning equipment. *Plus the outstanding comfort factor*—the elimination of frequent "too hot," "too clammy" periods common to earlier air conditioning.

The Sturtevant Compressor-Condenser and divided Fan-Evaporator for example, are synchronized in operation so that as the refrigeration demand drops, a portion of the compressor cylinders cut simultaneously with a corresponding portion of the evaporative coils. The coils remaining in operation forestall re-evaporation of the moisture—preventing sharp humidity fluctuations.

In effect, this split-system operates at full load when temperature and humidity rise a fraction above the comfort level—and at half load, exerting a *"holding"* action, when they are within the limits of the comfort zone.

NOW IS THE TIME

Now, while your "streamliners" and cars of tomorrow are on the drafting boards, is the time to consult the Sturtevant Engineer for the latest in air conditioning equipment. Whatever your needs—pressure ventilation, complete ice or mechanical air conditioning—the Sturtevant Engineer is at your service to help you employ the newest, most efficient methods of putting air to work. No obligation, of course.

B. F. STURTEVANT COMPANY
HYDE PARK BOSTON 36, MASS.
Branch Offices in Principal Cities

LOOK FOR—*AND GET*
These Sturtevant Air Conditioning Advantages:

1. More uniform temperature and humidity conditions in the car
2. Equipment designed for easy maintenance
3. Equipment designed for minimum space and weight
4. Equipment that requires a minimum power load

Sturtevant
REG. U. S. PAT. OFF.
Puts Air to Work

***STURTEVANT** "Railvane" Units or Systems are used by 40 railroads and are covered by more than 60 issued patents and patents pending.*

Molybdenum cast steels make tough, wear-resistant parts. Our data on practical analyses are always available.

CLIMAX FURNISHES AUTHORITATIVE ENGINEERING DATA ON MOLYBDENUM APPLICATIONS.

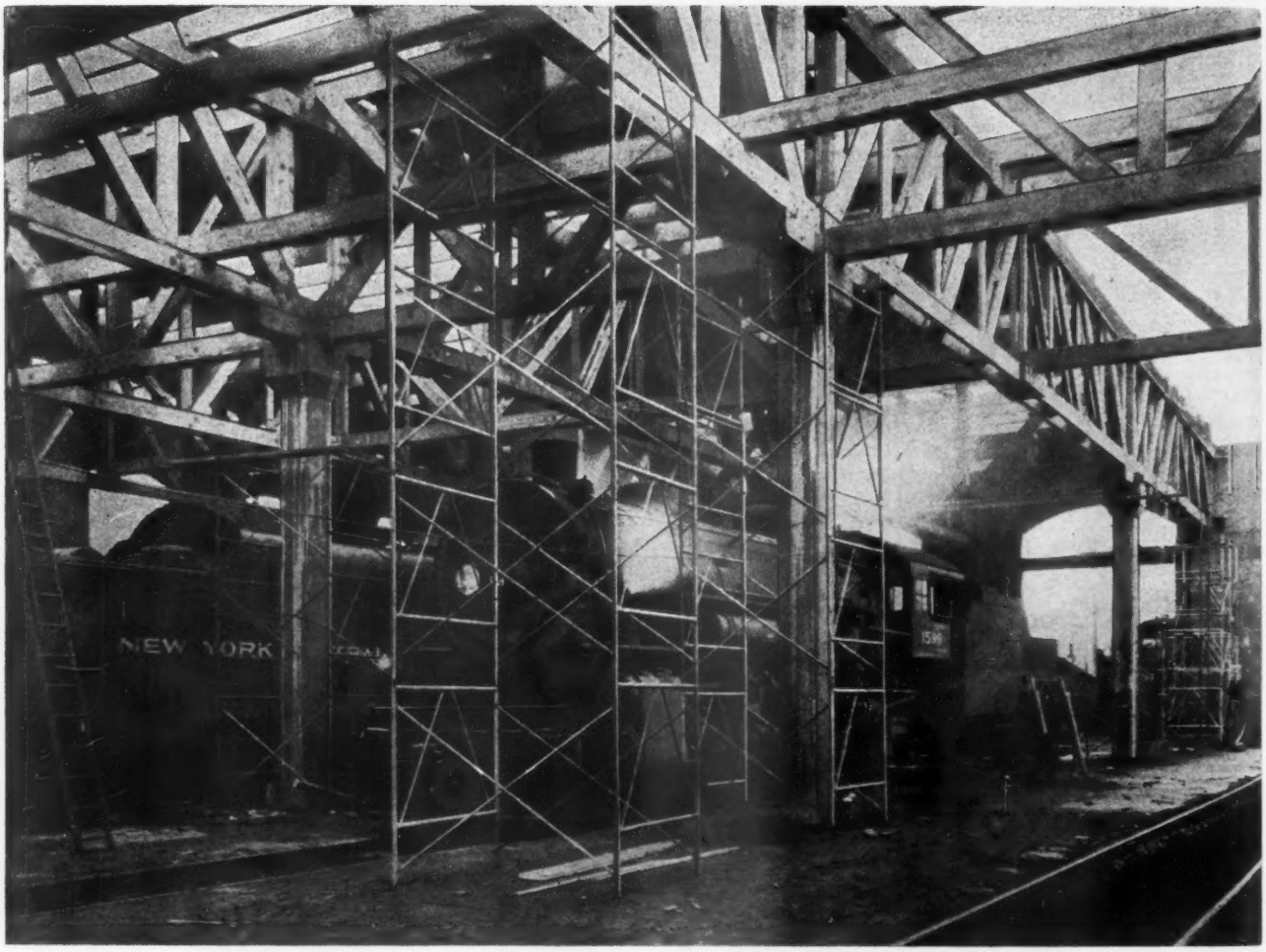
ARMY E NAVY

MOLYBDIC OXIDE, BRIQUETTED OR CANNED • FERROMOLYBDENUM • "CALCIUM MOLYBDATE"

Climax Molybdenum Company

500 Fifth Avenue · New York City

MOLY



DESIGN is IMPORTANT

...build with Timber Structures

New York Central engine house (150' x 120') roof trusses were prefabricated by Timber Structures, Inc. Architect, Engineer: New York Central. Contractor: Duffy Const. Co.

* * * * * * * * * * * * * * * * * *

The versatility of wood as a construction material still amazes many who have not followed this product through the war years.

It has been our privilege at Timber Structures to assist in the modernization of wood. Among other things, this has involved design; for without design the values of research, engineering, prefabrication, assembly and erection are not realized to the full.

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Railway Age

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Vol. 117 August 12, 1944 No. 7

PUBLISHED EACH SATURDAY BY THE SIMMONS-BOARDMAN PUBLISHING CORPORATION, 1309 NOBLE STREET, PHILADELPHIA 23, PA., WITH EDITORIAL AND EXECUTIVE OFFICES AT 30 CHURCH STREET, NEW YORK 7, N. Y. AND 105 W. ADAMS STREET, CHICAGO 3, ILL.

WASHINGTON 4, D. C.: 1081 NATIONAL PRESS BUILDING, CLEVELAND 13: TERMINAL TOWER SEATTLE 1: 1033 HENRY BUILDING, SAN FRANCISCO 4: 300 MONTGOMERY STREET, ROOMS 805-806. LOS ANGELES 14: 530 WEST 6th STREET.

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RAILWAY AGE IS A MEMBER OF ASSOCIATED BUSINESS PAPERS (A. B. P.) AND AUDIT BUREAU OF CIRCULATION (A. B. C.).

SUBSCRIPTIONS, INCLUDING 52 REGULAR WEEKLY ISSUES, AND SPECIAL DAILY EDITIONS PUBLISHED FROM TIME TO TIME IN NEW YORK OR IN PLACES OTHER THAN NEW YORK, PAYABLE IN ADVANCE AND POSTAGE FREE: UNITED STATES, U. S. POSSESSIONS AND CANADA: 1 YEAR $6.00; 2 YEARS, $10.00; FOREIGN COUNTRIES, NOT INCLUDING DAILY EDITIONS: 1 YEAR, $8.00; 2 YEARS, $14.00. SINGLE COPIES, 25 CENTS EACH. H. E. McCANDLESS, CIRCULATION MANAGER, 30 CHURCH STREET, NEW YORK.

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Used principally for hauling symbol trains over a 100-mile run, these three units are scheduled to make a round trip daily, and can handle a train of 3,200 tons without helpers, or stops for fuel or water.

Inventories Exceed Half Billion ***262***

Despite largest total since 1925, stocks represent the lowest ratio to operating expenses ever recorded. Class I Railroads used $1½ billions of materials in 1943.

Why Locomotive Boilers Foam ***268***

An A. A. R. committee headed by W. B. Leaf, D. & R. G. W. research technician, makes a study of the phenomena of boiler foam, and carryover. It is suggested that the accompanying graph be used to compare laboratory work with road investigations.

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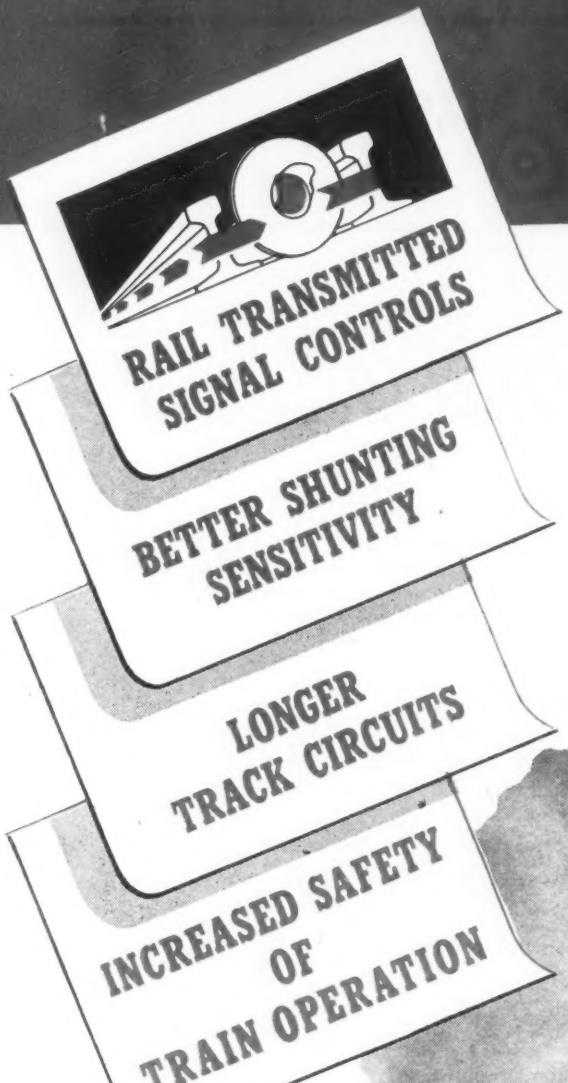
may be installed progressively!



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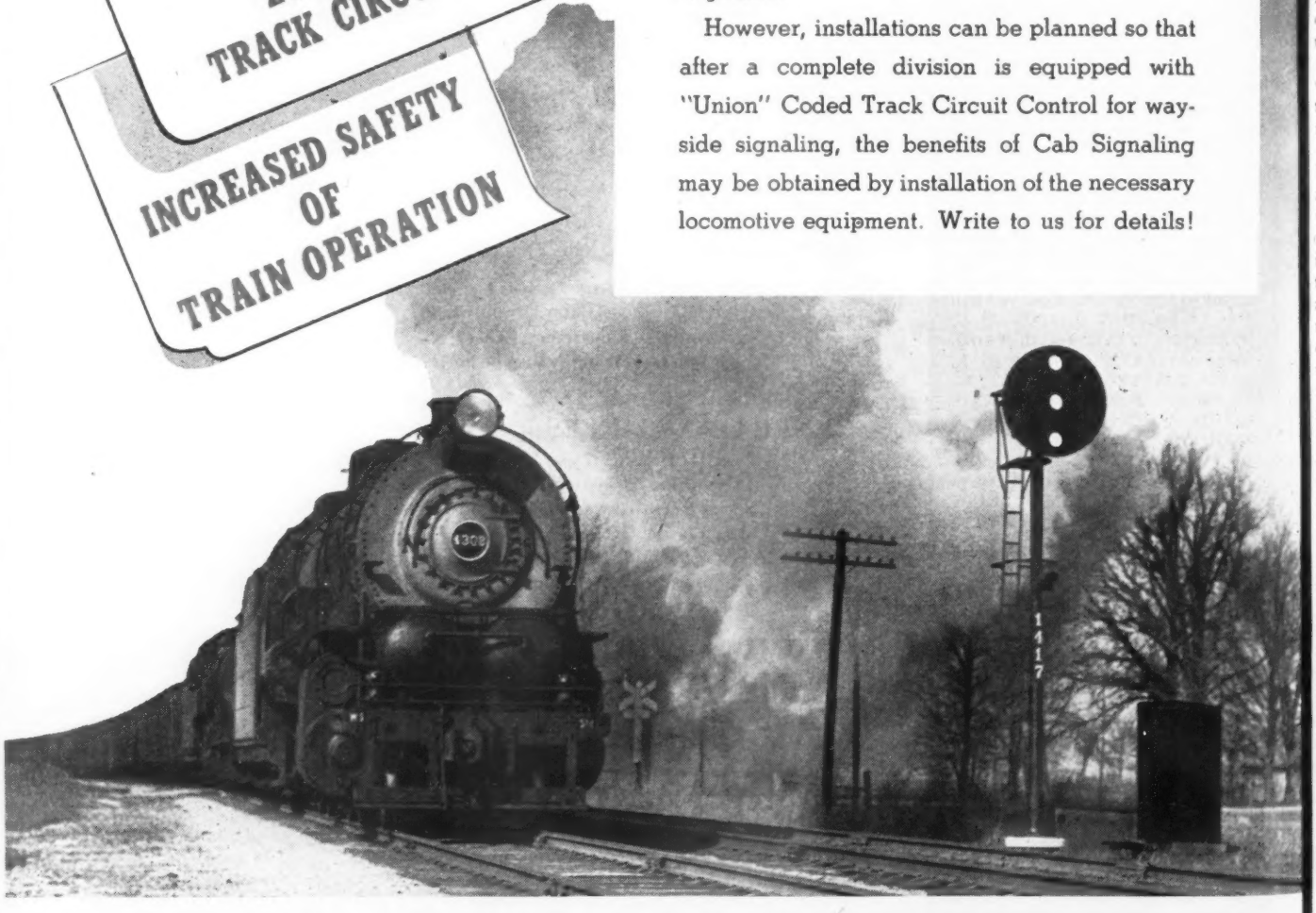

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The Week at a Glance

BUSINESS' VIEW OF RRs: This paper has not been especially backward in mentioning the inconsistencies of business' policy toward transportation—with its preaching of private enterprise while, in practice, it fosters transport's socialization. Now, however, along comes Secretary Scott of the Kansas City Board of Trade with a pretty persuasive reply to our strictures. We print his letter on page 272 and comment upon it in our leading editorial. Mr. Scott, in effect, asks us whose job it is to teach business men the economics of transportation? If they have swallowed unsound opinions from the railroads' adversaries—is it because the business man is just naturally a perverse critter anyhow or, perhaps, is it because error has been preached to him with more vigor and skill than the truth? If a man with a free choice between a garment of virgin wool and one of shoddy, selects the latter, it is just faintly possible that the purveyor of the sound merchandise was unskillful or indolent in setting forth its merits. What transportation truth is being as brilliantly and persistently exploited as the mendacious "trade barrier" charge?

●

PERSECUTING ATTORNEY: Wendell Berge, assistant U. S. attorney general, made a speech in Kansas City this week (reviewed in our news pages) in which, without supporting evidence or submission to cross-examination, he pronounced the railroads guilty of five heinous sins, viz.: (1) discriminatory freight rates against the West and South; (2) fixing rates by "private conspiracy"; (3) disadvantaging highway and water carriers; (4) monopolistic obstruction to improvements in railroad service; (5) disadvantaging air transport. To these alleged sins of commission he added another of intention—namely that the railroads are seeking to establish a monopoly of all forms of transportation. A prosecutor and public official, who thus pillories his victims in the court of public opinion on matters which are *res judicatae* in a properly-constituted tribunal, must entertain a rather low opinion of the community's understanding of the proprieties of political morality—which is not to say that his opinion is necessarily in error.

●

McCARTHY LEAVES O. D. T.: The O. D. T.'s head railroad man, Henry McCarthy, is going back to his alma mater, the B. & M., but he urges that nobody construe his action as implying his belief that the war transportation job is over the hill. The contrary is his opinion, and, he explains, he wouldn't be going back home if it weren't that he has such a capable successor (E. J. Connors, on leave from the U. P.'s operating vice-presidency). Director Johnson expressed reluctance to let Mr. McCarthy go—saying he had ably handled O. D. T.'s railroad relations with less than half the former staff.

●

LANDING ACROSS A BEACH: There were, probably, not many precedents in military experience for landing railroad rolling stock in an invaded country across a beach—but that job was done by U. S. Army-railroaders in Normandy, as is illustrated and described elsewhere in these pages. What the invaders needed was some work trains, so they could start right out from where they were in rehabilitating the damaged French railways—so the necessary equipment was put ashore, each car and locomotive with a trailer undercarriage.

●

COLOR LINE FOR JOBS: The federal government went to lengths of severity in suppressing the Philadelphia transit strike, quite without precedent since the New Dealers came to power. It will, consequently, be useful for management and unionists alike to note just what peculiar characteristics this disturbance had, thus to call forth all of Uncle Sam's coercive powers. The properties of the Philadelphia case are examined in an editorial herein—which concludes that objection by employees to the racial origin of their fellow-workers was *not* the fuse plug which detonated the federal fury. At the very time the Administration was making employment of black citizens in Philadelphia a "must," it ignored parallel union action in Illinois which forced yellow-hued citizens out of their jobs (and not very choice jobs either, compared to the ones demanded for the dusky brethren in Philadelphia). Sympathy of the New Dealers for the oppressed seems to burn somewhat more warmly for groups that have many votes than it does for even more unfortunate citizens whose voting power is negligible.

●

SCHOLARLY MISINFORMERS: A couple of weeks ago we published an editorial drawing attention to the harm done the railroads in public esteem (and, as a result, to their economic status as affected by politics), from misstatements and omissions regarding railroad performance in standard reference books, written by reputable authors. When such books contain errors—or fail to record essential facts—much more damage ensues than from comparable delinquencies in day-to-day journalism. Deficiencies in reporting in the daily and periodical press are, usually, but faintly remembered—but no time limit is set on the emanations of an authoritative book. On page 267, a short article by an economist in the employ of a state government, from his own experience, reinforces all our arguments and adds some good ones of his own. The source of the misunderstanding cannot by any means be ascribed entirely to the authors of such books either.

●

P. R. R. TRAIN PHONES: A large-scale application of train-to-train and train-to-tower communicating telephones is announced by the Pennsylvania (as reviewed in our news pages). The installation "utilizes high-frequency electric currents, transmitted by induction to the rails and to existing wires on poles paralled to the tracks." Two of the four main tracks between Harrisburg and Pittsburgh are to be equipped in the initial installation—plus approximately 300 locomotives, 90 cabooses, and six signal towers.

SIGNAL RECTIFICATION: The I. C. C. has observed in its accident investigations and otherwise that some railroads have cross-overs between main tracks which may be so occupied as to foul one of the main tracks, without causing an appropriate signal indication on the track so fouled. This practice, says the I. C. C., does not conform to section 51(b) of its instructions governing signaling systems—possibly through misapprehension—and "offending carriers" are warned to adjust their practices forthwith to accord with instructions.

●

SOCIALIZATION PROGRESS: New York's Park Commissioner Robert Moses has announced a plan to spend upwards of $7,000,000 to construct a "super-street" route (eliminating intersections at grade) to the city's 4,500-acre "Idlewild" airport, now under construction. The expenditure, it is estimated, will reduce to 40 minutes the motoring time between the airport and the airlines' terminal on Manhattan island, which now requires about an hour. Neither the airlines nor the users of the new route will pay anything toward its cost, which will be defrayed by state and federal funds—i.e., by millions of people who have never traveled to New York and never will. The outlay, of course, is in addition to tens of millions heretofore spent for existing bridges and "super-streets" which will be included in the parkway route to Idlewild. The airport is being financed by municipal funds—not by the air transport industry—and the city has just sold $13.7 millions of tax-exempt bonds as an installment on the $48,000,000 job. Railroad entrance to New York is not thus gained at public expense—and railroad facilities, moreover, yield *ad valorem* taxes.

●

WHY BOILERS FOAM: Results of a comprehensive examination of the physical factors affecting the production and disposition of foam in locomotive boilers are reported in an article in this issue. It is concluded that not merely proper chemical treatment, but refinements in boiler design also, are desirable.

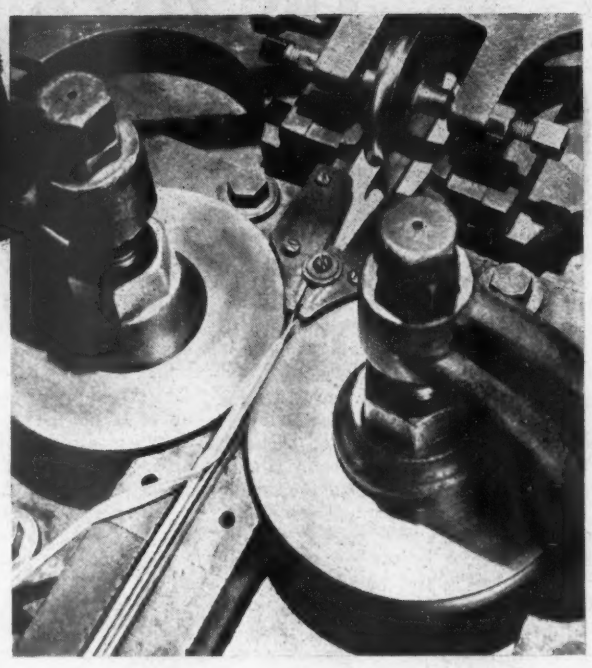
●

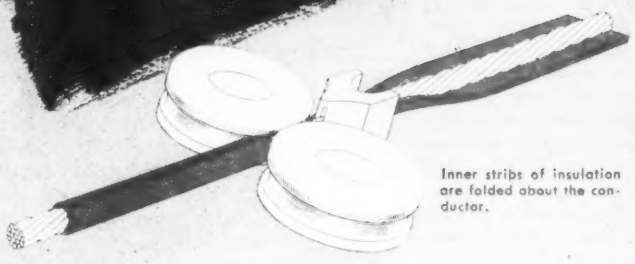
THE STORES INVENTORY: At the end of 1943, as disclosed in detailed tabulations in an article in this issue, the railroads had on hand $538 millions in materials and supplies. This was $29 million more than at the end of 1942, and almost 90 per cent more than in 1935 (the post-'Twenties low point). In relation to both operating revenues and expenses, however, the inventory in '43 dipped to the lowest ratio reached in any year since the annual tabulation was initiated in 1911.

●

FAST FREIGHT, 1% GRADES: The distance from Allentown to Maybrook is approximately 100 miles—maximum grades 1 per cent. The Lehigh & Hudson River has some 4-8-2 locomotives (described in this issue) with characteristics aimed at efficient movement of 3,200-ton symbol trains over such a district as this without intermediate stops for fuel or water.

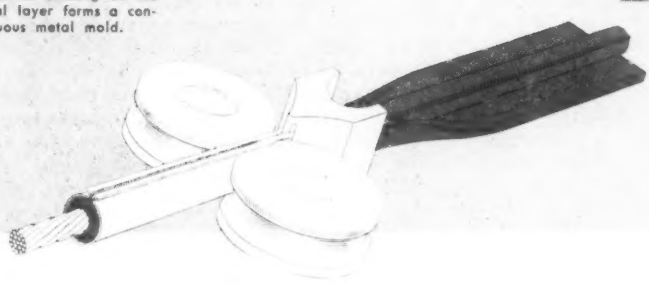
"...but ONLY Okonite uses the Strip Process for insulating cables"



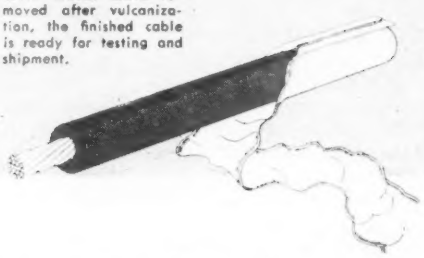


Inner strips of insulation are folded about the conductor.

Pure tin backing on the final layer forms a continuous metal mold.



With metal mold removed after vulcanization, the finished cable is ready for testing and shipment.



BECAUSE of the rubber shortage, *all* manufacturers have been forbidden by the government to use natural rubber in wires and cables for commercial use.

In 1942 it became apparent that Buna S would be the principal synthetic rubber to be used for insulation. However, the Okonite Company as early as 1930 had introduced Okolite, an oil-base insulation requiring only a small proportion of rubber.

In addition, in 1939 and before hostilities commenced, the Okonite Research Department had imported Buna S from Europe and it was not long before they found how to replace the small amount of natural rubber in Okolite with Buna S.

Extensive proving-ground tests have shown that Okolite made with Buna S possesses the same electrical and mechanical characteristics as when made with natural rubber. In addition, Okolite made with Buna S is applied to the conductor by the familiar Okonite Strip Insulating Process*.

While the industry, as a whole, is using Buna S rubber extensively, *only* Okonite uses the Strip Method to apply it. The Okonite Company, Passaic, New Jersey.

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The Okonite Strip Insulating Process* is a unique and superior method of applying rubber insulation to a conductor.

Strips, cut from uniformly calendered sheets, are passed through "covering wheels". These strips are formed or folded lengthwise about the conductor and thus insure perfect centering.

One continuous operation is used to apply at least two or more layers, as required, the outermost layer being a strip with tin backing.

The insulated conductor is thus temporarily encased in a continuous tin mold. It is wound around a drum of large diameter, ready for vulcanization. The metal mold provides uniform heat distribution throughout the length.

After the cable has cooled, following vulcanization, the tin backing is peeled off as the finished wire is unwound from one reel and wound on another.

3737

OKONITE

INSULATED WIRES AND CABLES

Why Did the Truckers Beat the Railways?

We publish elsewhere a letter from W. R. Scott, secretary of the Kansas City Board of Trade, regarding the recent referendum vote of members of the Chamber of Commerce of the United States favoring the fixing of maximum sizes and weights of motor vehicles by the federal government instead of by the states.

Mr. Scott's letter, and especially the last paragraph, should be carefully read and pondered by railway chief executives, railway labor leaders and everybody else who is concerned regarding the future of railway traffic, earnings and employment. The states *own* the highways within their borders, and much the major part of the investment in them has been made by the states. Highways in different states, and even within the same states, are not of equal strength, and therefore not able to stand equal loads. Therefore, the states have a moral, and probably a legal, right to regulate as they see fit the use of their highways by all vehicles, especially commercial buses and trucks.

Why and how, then, did the truckers get a majority of members of the U. S. Chamber to vote in favor of the federal government ousting the states from control of maximum sizes and weights, when, as the *Railway Age* has said, the obvious purpose of putting the federal government in control would be to help truckers "using government-owned highways take traffic from the privately-owned railways?" The plain answer is, that the truckers were more active and effective in influencing the votes of local commercial bodies than the railways were.

Public sentiment toward the railways, largely due to their performance during the war, is more favorable now than ever before. But public sentiment to which the railways do not effectively appeal when some concrete issue affecting their traffic, earnings and expenses is presented is of no value to them. The railways are represented by traffic and other officers and agents in every community, many of whom belong to local commercial organizations. In many or most states they have legislative committees. Many individual lines have public relations officers, as have also the Association of American Railroads and the associations of the eastern and western lines. The railway labor unions should be especially concerned about the future volume of railway traffic because of its effect on railway employment. If there is anything which individual railway officers and employees and all these organizations should be able to influence favorably to the railways at the present time, it is a vote by commercial bodies regarding a transportation matter. And yet in this instance they completely failed to do so.

Railway executives should start with the Association of American Railroads and go right down through all their organizations to ascertain why the truckers won such an easy victory over the railways. Mr. Scott is entirely right in implying that the incident shows very conclusively there is something, or many things, radically wrong with the functioning of the organizations the railways have created to protect them from attack, when the truckers can so easily get a majority of the country's local commercial organizations to support a proposal the plain purpose of which is to enable the trucks to compete more unfairly and effectively with the railways. That the truckers have won this battle shows that the railways, with their present organizations as they are now functioning, cannot reasonably hope to win other battles with competitors seeking subsidies and unequal regulation.

Efficiency FOR VICTORY

Race and Color as Job Qualifications

It is interesting and important to managers of industry and labor unionists alike to note from the action of the government in the Philadelphia transit strike that there is one issue, anyhow, which the present Administration will not permit organized labor to settle in its own favor by striking. Experience has demonstrated that strikes may be called with impunity against decisions of duly-constituted tribunals—and that strikes and threateners-of-strikes not only do not risk punishment for such coercion, but can usually count on at least a part of their non-adjudicated demands being conceded to them.

Also, strikes will be tolerated for a wide variety of frivolous causes—because employees are not satisfied with a foreman, or because they object to non-membership of fellow-employees in their labor organization. When strikes for such causes occur, the strikers are not punished. They run no risk of losing their pension or seniority rights. Even those who participate in picketing of a distinctly non-peaceful variety can usually depend on getting their jobs back with no loss of status.

The dealings between organized labor and both its employers and the federal government have for the unionists been a game of "heads we win, tails you lose." Now, however, after almost a dozen years of uninterrupted conciliatory treatment at the hands of federal authorities, the unionists have, by process of unremitting experiment, finally located one issue on which the Administration is adamant; and against which striking will not be tolerated.

The Philadelphia transit employees walked out against employment by the company of negro citizens as operators of its vehicles—a policy of non-discrimination ordered by the President's so-called Fair Employment Practice Committee. The Army seized the transit system, acting under Presidential order, and not only extended protection to non-strikers who resumed their duties, but was prepared to use soldiers actually to operate passenger-carrying vehicles if the strikers had not returned to work. Strikers were threatened with loss of seniority rights and unemployment insurance, and were told that they would be officially blacklisted against getting work anywhere else if they did not return promptly to their jobs. Furthermore, several leaders of the strike have been arrested for alleged violation of the Smith-Connally Act; and a grand jury investigation has been ordered, with the possibility that indictments may be returned against many others.

The strike quickly crumpled with such all-out use of the powers of the federal government against it, demonstrating that the nation need not have suffered any of the thousands of costly strikes in vital war industries which have occurred since Pearl Harbor, nor the temporizing with and yielding to unreasonable demands of strikers which have, up until last week, characterized the Administration's policy. By so vigorously and effectively suppressing this disturbance, the Administration unavoidably accepts culpability for the harm to the war effort from the thousands of similar work-stoppages which it tolerated.

It is significant that at the very time when racial discrimination against negro Americans was so signally put down in Philadelphia, no federal authority interposed to sustain the Illinois Central in the employment of some Japanese-Americans it had hired to do badly-needed track work; in this instance, the railroad was induced by complaints and threats of unionists to forego the services of these Americans. The federal

Whose Turn Comes Next in the Pot?

government's policy in defense of the economic rights of citizens of non-standard hues seems, therefore, not to be a general policy for the protection of all citizens, but rather to be a fostering guardianship available only to those pigmented groups whose numbers are sufficient to be of significance at the polls.

Locomotive Maintenance Costs

The heavy traffic now being handled by railways has resulted in locomotives accumulating mileage rapidly and thus increasing the expenditures required for running repair work and classified repairs in order to keep as many locomotives as possible in serviceable condition. On one relatively small road, for example, since 1940, the number of locomotive-miles per annum has increased 53 per cent and the cost of labor and material for locomotive repairs slightly over 100 per cent. On other roads, less striking increases have occurred, but, in general, the more intensive use of locomotives, with monthly and annual mileages stepped up 20 to 30 per cent, has been accompanied by increases in maintenance cost of around 50 per cent.

Reduced to a mileage basis, the cost of locomotive repairs on the first road mentioned increased from about 24 cents a mile in 1940 to 32½ cents a mile in 1943. Here again the increase was rather extreme, but an examination of the figures on a number of individual carriers shows average locomotive repair costs mounting up to 28 cents a mile, or 0.48 cent per thousand tractive effort pound-miles and $8,000 to $16,000 per unit owned per annum. The comparison of repair costs on a tractive effort pound-mile basis takes into account locomotive size and reflects somewhat more accurately the amount of repair work actually being done, although the mileage basis, alone, is still widely used. The cost per unit figures given vary quite widely, due to variations in both the size of locomotives and the kind and amount of repair work done.

Not only has the cost of classified repairs been definitely on the upgrade, particularly in the past few years, but running repairs also have shown the same trend due to rising labor and material costs. On one large carrier, for example, where classified repairs increased from about 6 cents a mile in 1940 to 10 cents a mile in 1943, running repairs increased from 14 to 18 cents a mile in the same period, making the total repair cost 28 cents a mile in the last year mentioned. In addition to increased expenditures for locomotive maintenance, many railroads have carried out extensive improvement programs.

What has been accomplished by these expenditures? The answer is given in current figures of locomotive performance as regards increased tonnage handled, substantially stepped-up daily and monthly mileages, increased mileage between shoppings and, in many instances, notable increases in miles per locomotive failure.

Boy Workers Today—Railroad Men of Tomorrow

Confronted with a manpower shortage, for which there is no complete solution under present war conditions, the railways are fortunate that they have been able to interest more than 18,000 high school boys over the country in aiding in essential work on the track. The fact that these boys, as a whole, are unable to turn out as much work in a day as full grown experienced trackmen, and that their employment demands special consideration in some cases, are beside the point at a time when the railways are still short approximately 40,000 track workers.

Important as is this immediate factor in the employment of these boys, there is a second factor in their employment that should not be overlooked, and that is the possibilities inherent in them as railroad men of the future. Who will say that in these thousands of boys, coming from all walks of life, the railroads may not find many skilled trackmen, foremen, supervisors, roadmasters, division engineers, and even higher officers in the future? The very fact that many of the boys are working on the track when, from a financial standpoint, they do not need to work at all, and that many others are there in spite of available opportunities in other industries at higher wages, is not without significance. Significant too is the fact that many of the boys are now working a second summer on the track. Unquestionably, the fascination of railroading is at work in the lives of many of them—the same fascination, coupled with a pride of achievement, that has led thousands of present railroad employees to make railroading a career.

If this premise is correct, the railways are now being given an opportunity which can be made to have an important bearing on their future. While during the recent decade of the depression they did not suffer from shortages in manpower, it is a fact that consistently during that period fewer and fewer young men trained in the colleges and other schools of higher learning of the country sought opportunities on the railroads. Whatever the reasons for this may have been, it is indicative of a trend that has been viewed with concern by many railway officers. Now, with more than 18,000 boys in their employ in roadway operations, with several thousand additional boys engaged in bridge, building and water service work, all of whom have their life work to choose, the railways have a fertile field in which to forage for the future.

The suggestion is not being made or implied that the railroads can or should exert any undue influence in directing the future course to be followed by any of its present-day boy employees, but it seems that they will be overlooking a golden opportunity, in the interest of the boys, as well as themselves, if they do not watch these boys carefully, and at least point out to the more promising the advantages of railroading as a life work.

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- Positive mechanical brake
- Controls in steering handle
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Railway Age

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Vol. 117 August 12, 1944 No. 7

PUBLISHED BY THE SIMMONS-BOARDMAN PUBLISHING CORPORATION, 1309 NOBLE STREET, PHILADELPHIA 23, PA., WITH EDITORIAL AND EXECUTIVE OFFICES AT 30 CHURCH STREET, NEW YORK 7, N. Y. AND 105 W. ADAMS STREET, CHICAGO 3, ILL.

WASHINGTON 4, D. C.: 1081 NATIONAL PRESS BUILDING. CLEVELAND 13: TERMINAL TOWER SEATTLE 1: 1033 HENRY BUILDING, SAN FRANCISCO 4: 300 MONTGOMERY STREET, ROOMS 805-806. LOS ANGELES 14: 530 WEST 6th STREET.

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RAILWAY AGE IS A MEMBER OF ASSOCIATED BUSINESS PAPERS (A. B. P.) AND AUDIT BUREAU OF CIRCULATION (A. B. C.).

SUBSCRIPTIONS, INCLUDING 52 REGULAR WEEKLY ISSUES, AND SPECIAL DAILY EDITIONS PUBLISHED FROM TIME TO TIME IN NEW YORK OR IN PLACES OTHER THAN NEW YORK, PAYABLE IN ADVANCE AND POSTAGE FREE: UNITED STATES, U. S. POSSESSIONS AND CANADA: 1 YEAR $6.00; 2 YEARS, $10.00; FOREIGN COUNTRIES, NOT INCLUDING DAILY EDITIONS: 1 YEAR, $8.00; 2 YEARS, $14.00. SINGLE COPIES, 25 CENTS EACH. H. E. McCANDLESS, CIRCULATION MANAGER, 30 CHURCH STREET.

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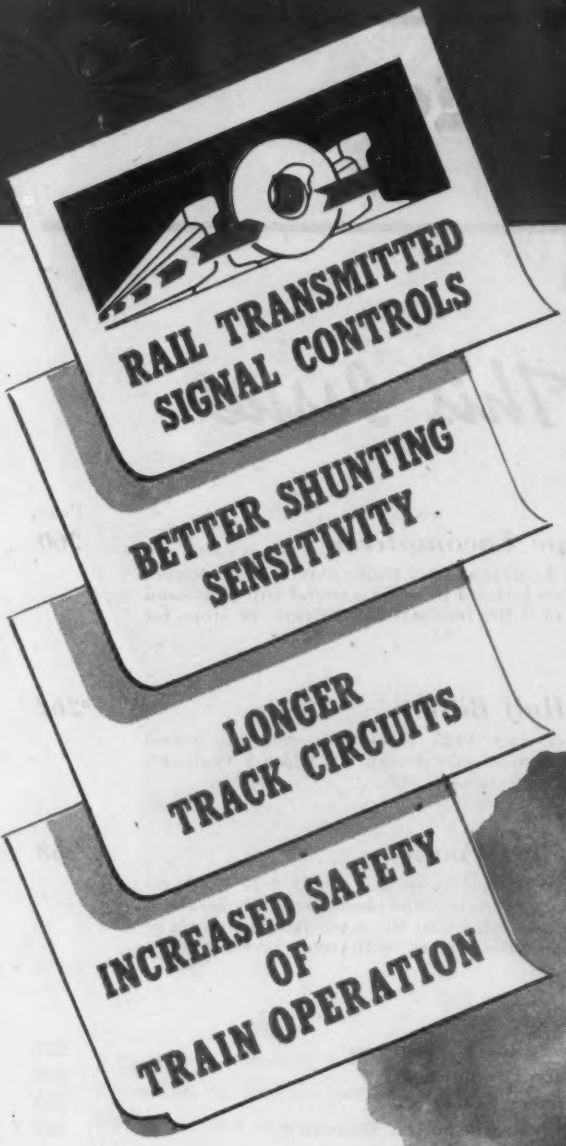
"UNION" CODED TRACK CIRCUIT CONTROL

may be installed progressively!



AS a result of its universality of application and its proven ability to increase the safety and reliability of signal systems, "Union" Coded Track Circuit Control is recognized as the ideal foundation for modern railway signaling.

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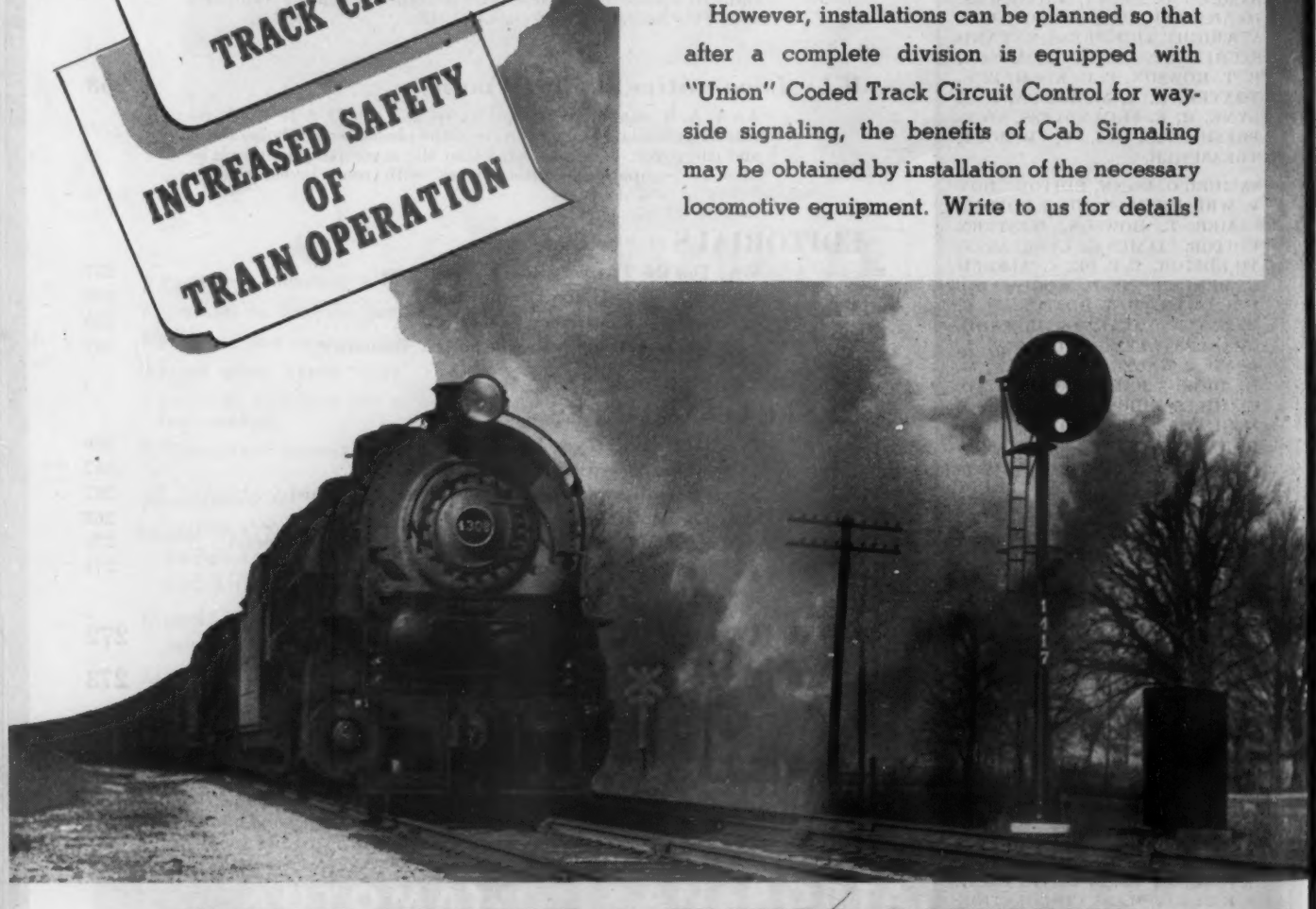


UNION SWITCH & SIGNAL COMPANY

SWISSVALE, PA.

315

NEW YORK CHICAGO ST. LOUIS SAN FRANCISCO

The Week at a Glance

BUSINESS' VIEW OF RRs: This paper has not been especially backward in mentioning the inconsistencies of business' policy toward transportation—with its preaching of private enterprise while, in practice, it fosters transport's socialization. Now, however, along comes Secretary Scott of the Kansas City Board of Trade with a pretty persuasive reply to our strictures. We print his letter on page 272 and comment upon it in our leading editorial. Mr. Scott, in effect, asks us whose job it is to teach business men the economics of transportation? If they have swallowed unsound opinions from the railroads' adversaries—is it because the business man is just naturally a perverse critter anyhow or, perhaps, is it because error has been preached to him with more vigor and skill than the truth? If a man with a free choice between a garment of virgin wool and one of shoddy, selects the latter, it is just faintly possible that the purveyor of the sound merchandise was unskillful or indolent in setting forth its merits. What transportation truth is being as brilliantly and persistently exploited as the mendacious "trade barrier" charge?

●

PERSECUTING ATTORNEY: Wendell Berge, assistant U. S. attorney general, made a speech in Kansas City this week (reviewed in our news pages) in which, without supporting evidence or submission to cross-examination, he pronounced the railroads guilty of five heinous sins, viz.: (1) discriminatory freight rates against the West and South; (2) fixing rates by "private conspiracy"; (3) disadvantaging highway and water carriers; (4) monopolistic obstruction to improvements in railroad service; (5) disadvantaging air transport. To these alleged sins of commission he added another of intention—namely that the railroads are seeking to establish a monopoly of all forms of transportation. A prosecutor and public official, who thus pillories his victims in the court of public opinion on matters which are *res judicatae* in a properly-constituted tribunal, must entertain a rather low opinion of the community's understanding of the proprieties of political morality—which is not to say that his opinion is necessarily in error.

●

McCARTHY LEAVES O. D. T.: The O. D. T.'s head railroad man, Henry McCarthy, is going back to his alma mater, the B. & M., but he urges that nobody construe his action as implying his belief that the war transportation job is over the hill. The contrary is his opinion, and, he explains, he wouldn't be going back home if it weren't that he has such a capable successor (E. J. Connors, on leave from the U. P.'s operating vice-presidency). Director Johnson expressed reluctance to let Mr. McCarthy go—saying he had ably handled O. D. T.'s railroad relations with less than half the former staff.

●

LANDING ACROSS A BEACH: There were, probably, not many precedents in military experience for landing railroad rolling stock in an invaded country across a beach—but that job was done by U. S. Army-railroaders in Normandy, as is illustrated and described elsewhere in these pages. What the invaders needed was some work trains, so they could start right out from where they were in rehabilitating the damaged French railways—so the necessary equipment was put ashore, each car and locomotive with a trailer undercarriage.

●

COLOR LINE FOR JOBS: The federal government went to lengths of severity in suppressing the Philadelphia transit strike, quite without precedent since the New Dealers came to power. It will, consequently, be useful for management and unionists alike to note just what peculiar characteristics this disturbance had, thus to call forth all of Uncle Sam's coercive powers. The properties of the Philadelphia case are examined in an editorial herein—which concludes that objection by employees to the racial origin of their fellow-workers was *not* the fuse plug which detonated the federal fury. At the very time the Administration was making employment of black citizens in Philadelphia a "must," it ignored parallel union action in Illinois which forced yellow-hued citizens out of their jobs (and not very choice jobs either, compared to the ones demanded for the dusky brethren in Philadelphia). Sympathy of the New Dealers for the oppressed seems to burn somewhat more warmly for groups that have many votes than it does for even more unfortunate citizens whose voting power is negligible.

●

SCHOLARLY MISINFORMERS: A couple of weeks ago we published an editorial drawing attention to the harm done the railroads in public esteem (and, as a result, to their economic status as affected by politics), from misstatements and omissions regarding railroad performance in standard reference books, written by reputable authors. When such books contain errors—or fail to record essential facts—much more damage ensues than from comparable delinquencies in day-to-day journalism. Deficiencies in reporting in the daily and periodical press are, usually, but faintly remembered—but no time limit is set on the emanations of an authoritative book. On page 267, a short article by an economist in the employ of a state government, from his own experience, reinforces all our arguments and adds some good ones of his own. The source of the misunderstanding cannot by any means be ascribed entirely to the authors of such books either.

●

P. R. R. TRAIN PHONES: A large-scale application of train-to-train and train-to-tower communicating telephones is announced by the Pennsylvania (as reviewed in our news pages). The installation "utilizes high-frequency electric currents, transmitted by induction to the rails and to existing wires on poles paralled to the tracks." Two of the four main tracks between Harrisburg and Pittsburgh are to be equipped in the initial installation—plus approximately 300 locomotives, 90 cabooses, and six signal towers.

SIGNAL RECTIFICATION: The I. C. C. has observed in its accident investigations and otherwise that some railroads have cross-overs between main tracks which may be so occupied as to foul one of the main tracks, without causing an appropriate signal indication on the track so fouled. This practice, says the I. C. C., does not conform to section 51(b) of its instructions governing signaling systems—possibly through misapprehension—and "offending carriers" are warned to adjust their practices forthwith to accord with instructions.

●

SOCIALIZATION PROGRESS: New York's Park Commissioner Robert Moses has announced a plan to spend upwards of $7,000,000 to construct a "super-street" route (eliminating intersections at grade) to the city's 4,500-acre "Idlewild" airport, now under construction. The expenditure, it is estimated, will reduce to 40 minutes the motoring time between the airport and the airlines' terminal on Manhattan island, which now requires about an hour. Neither the airlines nor the users of the new route will pay anything toward its cost, which will be defrayed by state and federal funds—i.e., by millions of people who have never traveled to New York and never will. The outlay, of course, is in addition to tens of millions heretofore spent for existing bridges and "super-streets" which will be included in the parkway route to Idlewild. The airport is being financed by municipal funds—not by the air transport industry—and the city has just sold $13.7 millions of tax-exempt bonds as an installment on the $48,000,000 job. Railroad entrance to New York is not thus gained at public expense—and railroad facilities, moreover, yield *ad valorem* taxes.

●

WHY BOILERS FOAM: Results of a comprehensive examination of the physical factors affecting the production and disposition of foam in locomotive boilers are reported in an article in this issue. It is concluded that not merely proper chemical treatment, but refinements in boiler design also, are desirable.

●

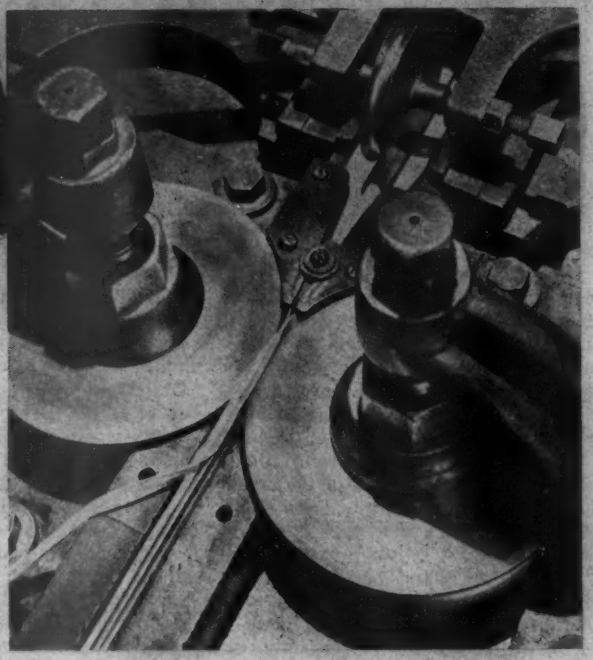
THE STORES INVENTORY: At the end of 1943, as disclosed in detailed tabulations in an article in this issue, the railroads had on hand $538 millions in materials and supplies. This was $29 million more than at the end of 1942, and almost 90 per cent more than in 1935 (the post-'Twenties low point). In relation to both operating revenues and expenses, however, the inventory in '43 dipped to the lowest ratio reached in any year since the annual tabulation was initiated in 1911.

●

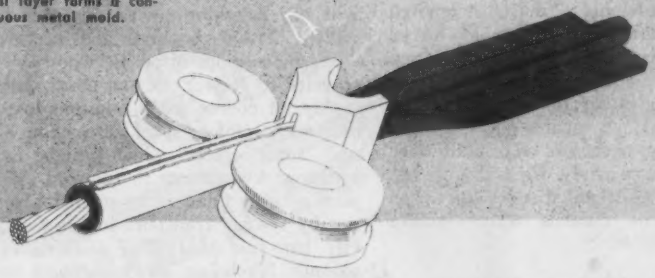
FAST FREIGHT, 1% GRADES: The distance from Allentown to Maybrook is approximately 100 miles—maximum grades 1 per cent. The Lehigh & Hudson River has some 4-8-2 locomotives (described in this issue) with characteristics aimed at efficient movement of 3,200-ton symbol trains over such a district as this without intermediate stops for fuel or water.

"...but ONLY Okonite uses the Strip Process for insulating cables"

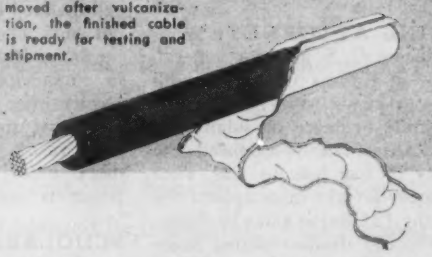
Inner strips of insulation are folded about the conductor.



Pure tin backing on the final layer forms a continuous metal mold.



With metal mold removed after vulcanization, the finished cable is ready for testing and shipment.



BECAUSE of the rubber shortage, *all* manufacturers have been forbidden by the government to use natural rubber in wires and cables for commercial use.

In 1942 it became apparent that Buna S would be the principal synthetic rubber to be used for insulation. However, the Okonite Company as early as 1930 had introduced Okolite, an oil-base insulation requiring only a small proportion of rubber.

In addition, in 1939 and before hostilities commenced, the Okonite Research Department had imported Buna S from Europe and it was not long before they found how to replace the small amount of natural rubber in Okolite with Buna S.

Extensive proving-ground tests have shown that Okolite made with Buna S possesses the same electrical and mechanical characteristics as when made with natural rubber. In addition, Okolite made with Buna S is applied to the conductor by the familiar Okonite Strip Insulating Process*.

While the industry, as a whole, is using Buna S rubber extensively, *only* Okonite uses the Strip Method to apply it. The Okonite Company, Passaic, New Jersey.

LOOK FOR THE ⬡ *SINGLE RIDGE*

* THE OKONITE STRIP PROCESS

The Okonite Strip Insulating Process* is a unique and superior method of applying rubber insulation to a conductor.

Strips, cut from uniformly calendered sheets, are passed through "covering wheels". These strips are formed or folded lengthwise about the conductor and thus insure perfect centering.

One continuous operation is used to apply at least two or more layers, as required, the outermost layer being a strip with tin backing.

The insulated conductor is thus temporarily encased in a continuous tin mold. It is wound around a drum of large diameter, ready for vulcanization. The metal mold provides uniform heat distribution throughout the length.

After the cable has cooled, following vulcanization, the tin backing is peeled off as the finished wire is unwound from one reel and wound on another.

3737

OKONITE

INSULATED WIRES AND CABLES

Why Did the Truckers Beat the Railways?

We publish elsewhere a letter from W. R. Scott, secretary of the Kansas City Board of Trade, regarding the recent referendum vote of members of the Chamber of Commerce of the United States favoring the fixing of maximum sizes and weights of motor vehicles by the federal government instead of by the states.

Mr. Scott's letter, and especially the last paragraph, should be carefully read and pondered by railway chief executives, railway labor leaders and everybody else who is concerned regarding the future of railway traffic, earnings and employment. The states *own* the highways within their borders, and much the major part of the investment in them has been made by the states. Highways in different states, and even within the same states, are not of equal strength, and therefore not able to stand equal loads. Therefore, the states have a moral, and probably a legal, right to regulate as they see fit the use of their highways by all vehicles, especially commercial buses and trucks.

Efficiency FOR VICTORY

Why and how, then, did the truckers get a majority of members of the U. S. Chamber to vote in favor of the federal government ousting the states from control of maximum sizes and weights, when, as the *Railway Age* has said, the obvious purpose of putting the federal government in control would be to help truckers "using government-owned highways take traffic from the privately-owned railways?" The plain answer is, that the truckers were more active and effective in influencing the votes of local commercial bodies than the railways were.

Public sentiment toward the railways, largely due to their performance during the war, is more favorable now than ever before. But public sentiment to which the railways do not effectively appeal when some concrete issue affecting their traffic, earnings and expenses is presented is of no value to them. The railways are represented by traffic and other officers and agents in every community, many of whom belong to local commercial organizations. In many or most states they have legislative committees. Many individual lines have public relations officers, as have also the Association of American Railroads and the associations of the eastern and western lines. The railway labor unions should be especially concerned about the future volume of railway traffic because of its effect on railway employment. If there is anything which individual railway officers and employees and all these organizations should be able to influence favorably to the railways at the present time, it is a vote by commercial bodies regarding a transportation matter. And yet in this instance they completely failed to do so.

Railway executives should start with the Association of American Railroads and go right down through all their organizations to ascertain why the truckers won such an easy victory over the railways. Mr. Scott is entirely right in implying that the incident shows very conclusively there is something, or many things, radically wrong with the functioning of the organizations the railways have created to protect them from attack, when the truckers can so easily get a majority of the country's local commercial organizations to support a proposal the plain purpose of which is to enable the trucks to compete more unfairly and effectively with the railways. That the truckers have won this battle shows that the railways, with their present organizations as they are now functioning, cannot reasonably hope to win other battles with competitors seeking subsidies and unequal regulation.

Race and Color as Job Qualifications

It is interesting and important to managers of industry and labor unionists alike to note from the action of the government in the Philadelphia transit strike that there is one issue, anyhow, which the present Administration will not permit organized labor to settle in its own favor by striking. Experience has demonstrated that strikes may be called with impunity against decisions of duly-constituted tribunals—and that strikes and threateners-of-strikes not only do not risk punishment for such coercion, but can usually count on at least a part of their non-adjudicated demands being conceded to them.

Also, strikes will be tolerated for a wide variety of frivolous causes—because employees are not satisfied with a foreman, or because they object to non-membership of fellow-employees in their labor organization. When strikes for such causes occur, the strikers are not punished. They run no risk of losing their pension or seniority rights. Even those who participate in picketing of a distinctly non-peaceful variety can usually depend on getting their jobs back with no loss of status.

The dealings between organized labor and both its employers and the federal government have for the unionists been a game of "heads we win, tails you lose." Now, however, after almost a dozen years of uninterrupted conciliatory treatment at the hands of federal authorities, the unionists have, by process of unremitting experiment, finally located one issue on which the Administration is adamant; and against which striking will not be tolerated.

The Philadelphia transit employees walked out against employment by the company of negro citizens as operators of its vehicles—a policy of non-discrimination ordered by the President's so-called Fair Employment Practice Committee. The Army seized the transit system, acting under Presidential order, and not only extended protection to non-strikers who resumed their duties, but was prepared to use soldiers actually to operate passenger-carrying vehicles if the strikers had not returned to work. Strikers were threatened with loss of seniority rights and unemployment insurance, and were told that they would be officially blacklisted against getting work anywhere else if they did not return promptly to their jobs. Furthermore, several leaders of the strike have been arrested for alleged violation of the Smith-Connally Act; and a grand jury investigation has been ordered, with the possibility that indictments may be returned against many others.

The strike quickly crumpled with such all-out use of the powers of the federal government against it, demonstrating that the nation need not have suffered any of the thousands of costly strikes in vital war industries which have occurred since Pearl Harbor, nor the temporizing with and yielding to unreasonable demands of strikers which have, up until last week, characterized the Administration's policy. By so vigorously and effectively suppressing this disturbance, the Administration unavoidably accepts culpability for the harm to the war effort from the thousands of similar work-stoppages which it tolerated.

It is significant that at the very time when racial discrimination against negro Americans was so signally put down in Philadelphia, no federal authority interposed to sustain the Illinois Central in the employment of some Japanese-Americans it had hired to do badly-needed track work; in this instance, the railroad was induced by complaints and threats of unionists to forego the services of these Americans. The federal

Whose Turn Comes Next in the Pot?

government's policy in defense of the economic rights of citizens of non-standard hues seems, therefore, not to be a general policy for the protection of all citizens, but rather to be a fostering guardianship available only to those pigmented groups whose numbers are sufficient to be of significance at the polls.

Locomotive Maintenance Costs

The heavy traffic now being handled by railways has resulted in locomotives accumulating mileage rapidly and thus increasing the expenditures required for running repair work and classified repairs in order to keep as many locomotives as possible in serviceable condition. On one relatively small road, for example, since 1940, the number of locomotive-miles per annum has increased 53 per cent and the cost of labor and material for locomotive repairs slightly over 100 per cent. On other roads, less striking increases have occurred, but, in general, the more intensive use of locomotives, with monthly and annual mileages stepped up 20 to 30 per cent, has been accompanied by increases in maintenance cost of around 50 per cent.

Reduced to a mileage basis, the cost of locomotive repairs on the first road mentioned increased from about 24 cents a mile in 1940 to 32½ cents a mile in 1943. Here again the increase was rather extreme, but an examination of the figures on a number of individual carriers shows average locomotive repair costs mounting up to 28 cents a mile, or 0.48 cent per thousand tractive effort pound-miles and $8,000 to $16,000 per unit owned per annum. The comparison of repair costs on a tractive effort pound-mile basis takes into account locomotive size and reflects somewhat more accurately the amount of repair work actually being done, although the mileage basis, alone, is still widely used. The cost per unit figures given vary quite widely, due to variations in both the size of locomotives and the kind and amount of repair work done.

Not only has the cost of classified repairs been definitely on the upgrade, particularly in the past few years, but running repairs also have shown the same trend due to rising labor and material costs. On one large carrier, for example, where classified repairs increased from about 6 cents a mile in 1940 to 10 cents a mile in 1943, running repairs increased from 14 to 18 cents a mile in the same period, making the total repair cost 28 cents a mile in the last year mentioned. In addition to increased expenditures for locomotive maintenance, many railroads have carried out extensive improvement programs.

What has been accomplished by these expenditures? The answer is given in current figures of locomotive performance as regards increased tonnage handled, substantially stepped-up daily and monthly mileages, increased mileage between shoppings and, in many instances, notable increases in miles per locomotive failure.

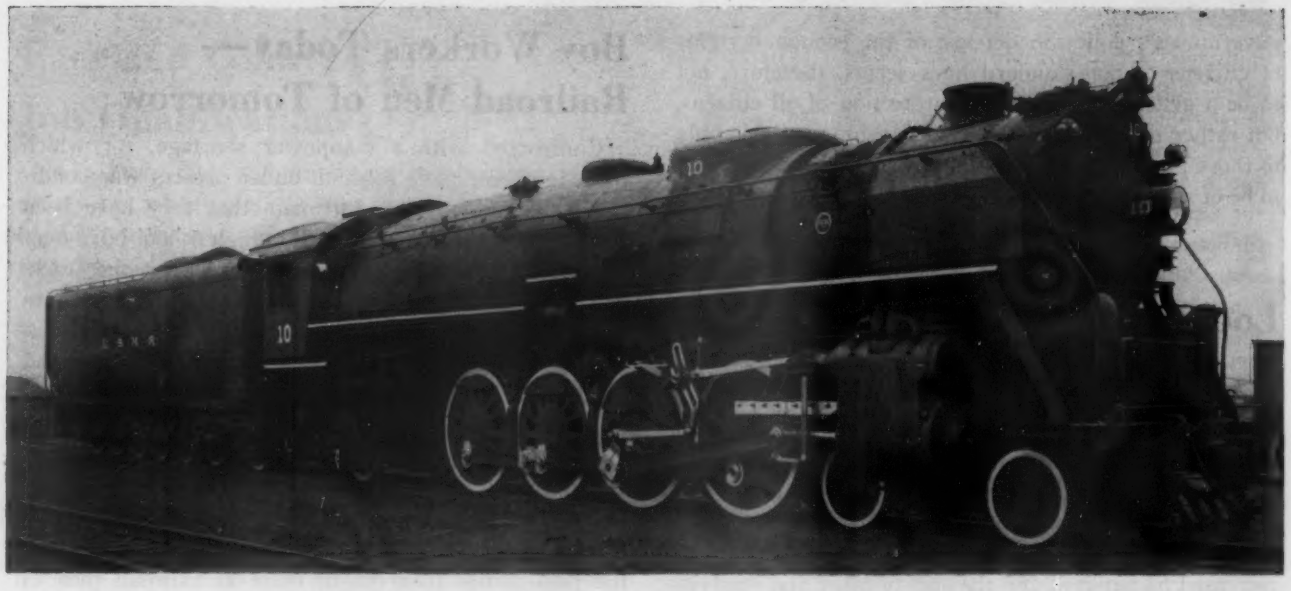
Boy Workers Today—Railroad Men of Tomorrow

Confronted with a manpower shortage, for which there is no complete solution under present war conditions, the railways are fortunate that they have been able to interest more than 18,000 high school boys over the country in aiding in essential work on the track. The fact that these boys, as a whole, are unable to turn out as much work in a day as full grown experienced trackmen, and that their employment demands special consideration in some cases, are beside the point at a time when the railways are still short approximately 40,000 track workers.

Important as is this immediate factor in the employment of these boys, there is a second factor in their employment that should not be overlooked, and that is the possibilities inherent in them as railroad men of the future. Who will say that in these thousands of boys, coming from all walks of life, the railroads may not find many skilled trackmen, foremen, supervisors, roadmasters, division engineers, and even higher officers in the future? The very fact that many of the boys are working on the track when, from a financial standpoint, they do not need to work at all, and that many others are there in spite of available opportunities in other industries at higher wages, is not without significance. Significant too is the fact that many of the boys are now working a second summer on the track. Unquestionably, the fascination of railroading is at work in the lives of many of them—the same fascination, coupled with a pride of achievement, that has led thousands of present railroad employees to make railroading a career.

If this premise is correct, the railways are now being given an opportunity which can be made to have an important bearing on their future. While during the recent decade of the depression they did not suffer from shortages in manpower, it is a fact that consistently during that period fewer and fewer young men trained in the colleges and other schools of higher learning of the country sought opportunities on the railroads. Whatever the reasons for this may have been, it is indicative of a trend that has been viewed with concern by many railway officers. Now, with more than 18,000 boys in their employ in roadway operations, with several thousand additional boys engaged in bridge, building and water service work, all of whom have their life work to choose, the railways have a fertile field in which to forage for the future.

The suggestion is not being made or implied that the railroads can or should exert any undue influence in directing the future course to be followed by any of its present-day boy employees, but it seems that they will be overlooking a golden opportunity, in the interest of the boys, as well as themselves, if they do not watch these boys carefully, and at least point out to the more promising the advantages of railroading as a life work.



L. & H. R. 4-8-2 Type Locomotives

Three units built for fast freight service by the Baldwin Locomotive Works have 67,000 lb. tractive force — Tender capacity 23,000 gals. and 21 tons

WITHIN the past four months the Lehigh & Hudson River has installed three 4-8-2 type locomotives in fast freight service which were built by the Baldwin Locomotive Works. These new units follow the general design of a group of five 4-8-2 type units built in 1941 for the Boston & Maine by the same builder. They have a tractive force of 67,000 lb., a total engine weight of 419,500 lb., 73-in. drivers and 240 lb. boiler pressure. The tenders are designed for 21 tons of coal and 23,000 gallons of water.

These locomotives are used principally in hauling symbol trains between Allentown, Pa., and Maybrook, N. Y., a distance of about 100 miles. The locomotives are scheduled to make a round trip every day and can handle a train of 3,200 tons over the entire run without helpers and without stops for fuel or water. The maximum grades encountered in this territory are about one per cent.

The Boiler

The boilers are conical in design, being 84 in. outside diameter at the first course and 96 in. at the third. They are designed for 240 lb. working pressure and have a firebox length of 126⅛ in. by 90¼ in. in width. The combustion chamber is 66 in. long. The total evaporative heating surface is 4,511 sq. ft. and the superheating surface, with the Elesco Type E 103-unit superheater, is 1,887 sq. ft.

The firebox is designed with 6 in. water space at the front and 5 in. at the sides and back. The crown and side furnace sheet, ⅜ in. in thickness, are in one piece and three Thermic syphons are welded into the crown supporting the Security brick arch. The fourth syphon is located on the center line of the boiler in the combustion chamber. Flannery flexible staybolts are used in the breaking zones of the side sheets, in the back head, combustion chamber and throat sheet. Fuel is fed to the grates by a Standard HT stoker and water is supplied by a Sellers Type SR non-lifting injector of 7,000 gal. capacity located on the right side and a Worthington 5½ SA feedwater heater located on the left side. The boilers are equipped with Franklin firedoors, Barco low water alarms, Okadee blowoff cocks and Consolidated safety valves.

Foundation and Running Gear

These locomotives, like the Boston & Maine, have smoke lifters attached at the sides of the smoke box.

The foundation consists of a General Steel Castings Corporation cast-steel locomotive bed. The cylinders, air-pump supports, air reservoirs, feedwater-pump supports, firebox supports, back bumper and brake-hanger fulcrums are cast integral.

The leading truck is the General Steel Casting Corporation's four-wheel inside journal constant resistance type with 36-in. wheels mounted on carbon steel axles with 7½-in. journals operating in Timken roller bearings. The driving wheels have 73-in. tires on Boxpok 66-in. diameter centers which, in turn, are mounted on carbon steel hollow-bored axles operating in plain bearings. Franklin driving-box cellars are used on the driving journals. The journal size on the front, intermediate and back wheels is 11½ in. by 14 in.; the main journal is 13½ in. by 14 in. The trailer truck is the General Steel Castings Corporation Delta two-wheel outside bearing type having 45-in. wheels mounted on carbon-steel axles—9-in. by 16-in. journals in plain bearings.

The cylinders are 28-in. bore by 31-in. stroke having cast-iron cylinder bushings and rolled-steel pistons with Hunt-Spiller Duplex rings. The valves are 14 in. in diameter and also are equipped with Hunt-Spiller Duplex packing rings. The valve travel is 7½ in. The cylinders are equipped with Prime cylinder cocks.

The guides are of the multiple-bearing type equipped with the Alco Slidguide attachment. The valve motion is the Walschaerts type controlled by Franklin power reverse gear. The side and main rods on these locomotives are I-section; of hammered steel, with solid ends. Fixed bushings are used in the side rods at the front, intermediate and back wheels and at the front end of the main rod, and floating bushings are used at the main rods and at the front connection of the side rod.

Reciprocating Parts

The total weight of the reciprocating parts on one side of the locomotive is 2,402 lb., 946 lb. of which is balanced. The unbalanced portion of the reciprocating weights represent 3.47 lb. per 1,000 lb. of total weight of the engine in working order. The overbalance is distributed, 130 lb. to the main wheel and 272 lb. to each of the other three wheels. The main wheels are crossbalanced. The dynamic augment at diameter speed is 6,460 lb. at the main wheel and 13,510 lb. at each of the other wheels.

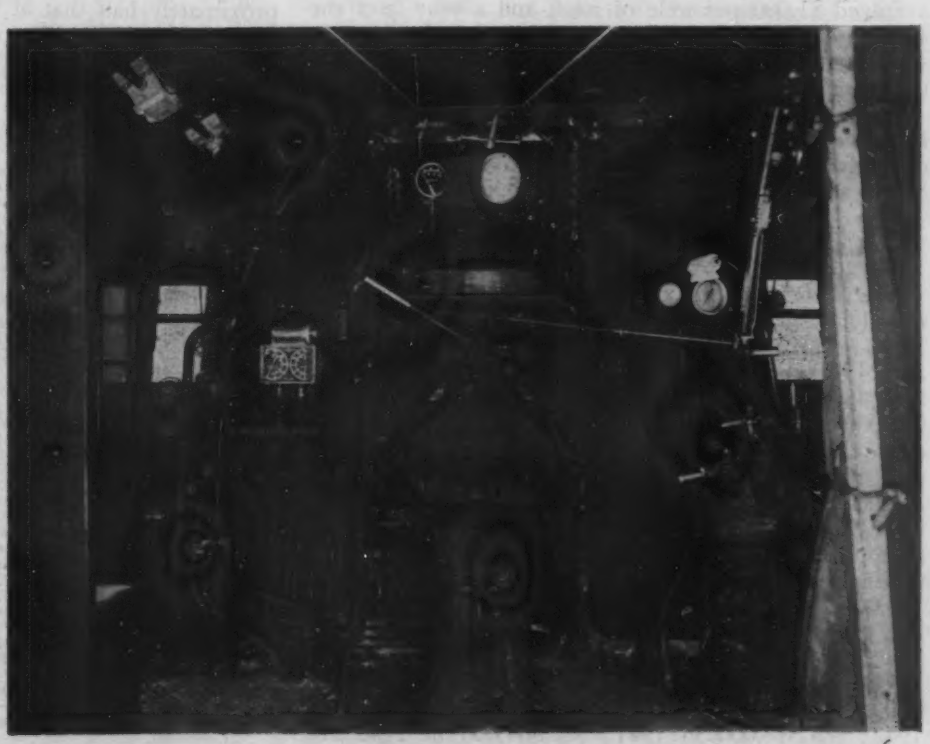
Mechanical lubrication is supplied by one 26-pint eight-feed lubricator for the cylinders, valve and guides and one 36-pint ten-feed lubricator for valve-stem guides, driving and trailer-truck pedestals and hub faces, and engine-truck center pins. Alemite lubrication is used at numerous locations on the running gear.

Other specialties used on these locomotives are Pyle-National headlight equipment, Chicago Pneumatic speed recorder, Franklin radial buffer, Prime clear-vision windows and windshields, Sellers coal sprinklers, Viloco rail washers and King sanders.

The foundation brake equipment was furnished by the American Brake Division of the Westinghouse Air Brake Company and the locomotive and tender operating brake is Westinghouse Schedule 8ET. Air is supplied for the brake system by two 8½-in. cross-compound compressors. The tenders are equipped with 23,000-gal. riveted steel tanks having semi-cylindrical sides and rounded at the top. The coal space is designed for 21 tons of fuel. The tank is supported on a General Steel Castings steel underframe on which the bumpers and the pedestals for five pairs of wheels are cast integral. The wheels in the pedestals are 42 in. in diameter mounted on carbon-steel axles with 6½-in. journals operating in Timken roller bearings. In addition there is a General Steel Castings Corporation's four-wheel center-bearing truck having wheels of the same diameter. The axles of this four-wheel truck are also mounted in Timken roller bearings. The total wheelbase of the tender is 32 ft. 8 in. and the wheelbase of the four-wheel truck is 7 ft. 2 in. The tender is equipped with American Steel Foundries Simplex clasp brakes operated by cylinders mounted on the truck and the tender. The tender draft gear is Miner A22XB.

General Dimensions and Weights of the Lehigh & Hudson River 4-8-2 Type Locomotives

Railroad	Lehigh & Hudson River
Builder	Baldwin Locomotive Works
Type of locomotive	4-8-2
Road numbers	10—12
Date built	April, 1944
Service	Freight
Rated tractive force, engine, 85 per cent, lb.	67,200
Weights in working order, lb.:	
On drivers	268,500
On front truck	83,000
On trailing truck	68,000
Total engine	419,500
Tender (⅔ loaded)	324,250
Wheel bases, ft. and in.:	
Driving	19—3
Engine, total	44—2
Engine and tender, total	91—1⅛
Driving wheels, diameter outside tires, in.	73
Cylinders, number, diameter and stroke, in.	2—28 x 31
Valve gear, type	Walschaerts
Valves, piston type, size, in.	14
Maximum travel, in.	7½
Boiler:	
Steam pressure, lb.	240
Diameter, first ring, inside, in.	82⅜₁₆
Firebox length, in.	126⅛
Firebox width, in.	90¼
Combustion chamber length, in.	66
Arch tubes, number and diameter, in.	None
Thermic syphons, number	Four
Tubes, number and diameter, in.	50—2¼
Flues, number and diameter, in.	201—3½
Length over tube sheets, ft.-in.	19—0
Fuel	Bituminous coal
Stoker	Standard HT
Grate area, sq. ft.	79
Heating surfaces, sq. ft.:	
Firebox and comb. chamber	352
Arch tubes	None
Syphons	123
Firebox, total	475
Tubes and flues	4,036
Evaporative, total[1]	4,511
Superheater	1,887
Combined evap. and superheater	5,398
Tender:	
Style	Rectangular
Water capacity, gals.	23,000
Fuel capacity, tons	21
Wheels	14



Inventories Exceed Half Billion

Despite largest total since 1925, stocks represent lowest ratio to operating expenses on record—Class I railroads used $1½ billions of materials in 1943

ALTHOUGH railway purchases of fuel, materials and supplies (excluding locomotives and cars), in 1943, increased approximately $143,097,000 or 10 per cent compared with the preceding year, aggregate railway inventories of these items on January 1, 1944, were only $29,252,000 or six per cent greater than in 1943. Compared with previous years, the January 1, 1944 inventory was 15 per cent greater than in 1942, 58 per cent larger than in 1941 and 62 per cent greater than in 1940, without considering adjustments for increases in material prices.

Despite the fact that the total inventory value as of January 1, 1944 was greater than for any year since 1925, dollar for dollar it represented the smallest aggregate inventory in relation to both operating revenues and operating expenses in any year since 1911, when the compilation of this information first was undertaken. The aggregate inventory represented only six per cent of operating revenue, compared with 6.6 per cent in the preceding year, 8.4 per cent at the beginning of 1942, 7.8 per cent for 1941, 8.2 per cent for 1940, 12.9 per cent at the beginning of 1919, 12.5 for 1918, 9 per cent for 1917 and 8.4 as of July 1, 1915.

The total inventory at the beginning of this year was equivalent to $2,360 of unapplied materials and supplies per mile of road, compared with $2,240 at the first of 1943, $2,030 at the first of 1942, $1,460 at the first of 1941 and $1,415 per mile on January 1, 1940. Comparing these figures with the period of World War I, July 1, 1914, found the railways with aggregate inventories which averaged $1,000 per mile of road, and a year later the average dropped to $980 but from that period on it rose steadily to $1,310 on January 1, 1917, to $2,000 on January 1, 1918, and $2,540 at the beginning of 1919.

These and other facts are revealed by *Railway Age's* fifteenth annual analysis, based on special reports received from practically all the Class I roads in the United States and several switching and terminal companies.

Used $1½ Billions of Materials in 1943

The Class I railroads of the United States used approximately $1,563,241,000 of material, supplies and fuel in 1943, or $172,966,000 more than the 1942 total of $1,390,245,000, and as compared to $1,196,000,000 in 1941; $990,457,000 in 1940; $902,480,000 in 1939; and $1,051,017,000 in 1937. Total disbursements in 1943 included approximately $520,744,000 of coal and fuel oil, as compared to $413,226,000 in the preceding year; $325,368,000 in 1941; $269,556,000 in 1940; and $250,725,000 in 1939. New and relay rail disbursed in 1943 amounted to approximately $86,532,000, as compared to $83,623,000 in the preceding year; $78,168,000 in 1941; $67,103,000 in 1940 and $57,903,000 in 1939. Of the rail laid in 1943, approximately $61,720,000 was reported as new and $24,812,000 was reported as relay.

The Class I roads disbursed approximately $80,802,000 of crossties in 1943, as compared to $75,731,000 in 1942; $61,518,000 in 1941; $55,864,000 in 1940 and $56,142,000 in 1939. Storehouse and miscellaneous materials used principally for maintenance and repairs totaled $875,164,000 as compared to $817,666,000 in 1942; $730,859,000 in 1941; $597,913,000 in 1940 and $537,711,000 in 1939. Secondhand materials and supplies manufactured by railway shops, as well as newly purchased supplies, are with materials consumed.

The sale of railway scrap by the Class I roads last year amounted to approximately $55,061,000, as compared to $53,409,000 in 1942; $58,010,000 in 1941; $62,689,000 in 1940; $53,337,000 in 1939 and $68,552,000 in 1937.

Inventories Pass Half Billion Mark

Materials, supplies and fuel held in stock by the Class I line haul railroads of the United States on January 1, 1944, as reported by the carriers to the Interstate Commerce Commission, totaled $532,721,000. As subdivided in special reports to the *Railway Age*, this total included $50,221,000 of fuel, $22,342,000 of new and old rail, $67,964,000 of crossties, $382,566,000 of stocks in storehouses and $9,628,000 of unsold scrap. These inventories include standby materials, in addition to materials and supplies that are used regularly and represent a normal turnover.

The money invested in fuel inventories, dollar for dollar, was $2,509,000 greater than on January 1, 1942, and the greatest amount since 1929. Approximately $4,211,000 more money was tied up in rail than on January 1, 1942, when the $18,131,000 inventory was approximately half that at the beginning of 1935 and the lowest since 1929. The investment in crossties jumped

Materials and Supplies on Hand—United States Railroads*

	Amount	Change	Per Cent of Op. Rev.	Per Cent of Op. Exp.
June 30, 1911	$244,932,000	$.....	8.6	12.4
June 30, 1912	246,790,000	+1,858,000	8.5	12.1
June 30, 1913	300,601,000	+53,811,000	9.4	12.4
June 30, 1914	278,940,000	−21,661,000	8.9	12.2
June 30, 1915	248,888,000	−30,052,000	8.4	11.9
Dec. 31, 1916	333,361,000	+84,473,000	9.0	13.7
Dec. 31, 1917	514,051,000	+180,690,000	12.5	17.6
Dec. 31, 1918	641,759,000	+127,708,000	12.9	15.8
Dec. 31, 1919	608,527,000	−33,232,000	11.6	13.5
Dec. 31, 1920	767,267,000	+158,740,000	12.1	12.9
Dec. 31, 1921	676,125,000	−91,142,000	12.0	14.4
Dec. 31, 1922	556,260,000	−119,865,000	9.7	12.3
Dec. 31, 1923	693,078,000	+136,818,000	10.8	13.9
Dec. 31, 1924	569,690,000	−123,388,000	9.4	12.3
Dec. 31, 1925	535,126,000	−34,564,000	8.6	11.5
Dec. 31, 1926	561,007,000	+25,881,000	8.6	11.8
Dec. 31, 1927	532,063,000	−28,944,000	8.5	11.4
Dec. 31, 1928	478,625,000	−53,438,000	7.7	10.6
Dec. 31, 1929	477,051,000	−1,574,000	7.5	10.4
Dec. 31, 1930	437,375,000	−39,676,000	8.2	11.0
Dec. 31, 1931	379,992,000	−57,383,000	8.0	11.5
Dec. 31, 1932	321,595,000	−58,397,000	10.8	13.1
Dec. 31, 1933	296,069,000	−25,526,000	9.3	12.9
Dec. 31, 1934	302,346,000	+6,277,000	9.1	12.2
Dec. 31, 1935	284,560,000	−17,786,000	8.2	10.8
Dec. 31, 1936	311,738,000	+27,178,000	7.6	10.5
Dec. 31, 1937	390,371,000	+78,633,000	9.3	12.3
Dec. 31, 1938	322,161,000	−68,210,000	8.9	11.6
Dec. 31, 1939	331,716,000	+9,555,000	8.2	10.9
Dec. 31, 1940	339,156,000	+7,440,000	7.8	10.8
Dec. 31, 1941	466,259,000	+127,103,000	8.4	12.3
Dec. 31, 1942	509,748,000	+43,489,000	6.6	10.7
Dec. 31, 1943**	538,000,000	+28,252,000	6.0	9.5

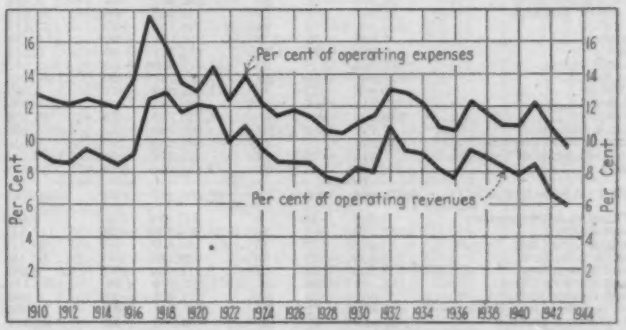
* Includes Class I, II, III and Switching and Terminal Railroads.
** Estimated.

almost $15,000,000 during the year and was greater than for any similar date since the beginning of 1932, while in 1931 it stood at $101,200,000. Stores stocks climbed $7,190,000 during the year and on January 1, 1944 were $90,566,000 greater than on the same day in 1930 and substantially greater than at the beginning of any other year since that time. The value of scrap materials on hand showed comparatively little change and dropped $177,000 from that of a year previous.

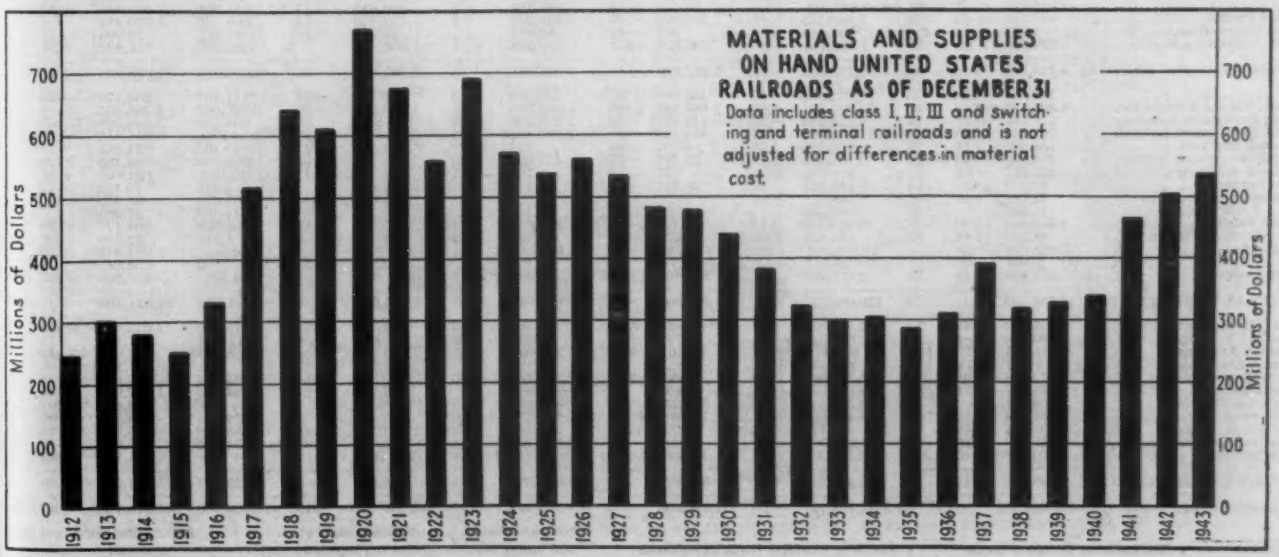
Based on the average consumption of the 12 months previous, the inventory on January 1, 1944, represented a 33-day stock of fuel compared with 42 days' stock at the beginning of 1943; 45 days' at the beginning of 1942; 32 days' stock at the first of 1941 and 32 days' supply at the beginning of 1930. The roads in the New England region carried a supply equivalent to 32 days' average supply, compared with 59 days' supply a year previous; the railways in the Great Lakes region carried an average of 28 days' supply, compared with 35 a year before; 45 days' average supply was in stock in the Central Eastern region, compared with 45 days' supply at the beginning of 1942; the average supply in the Pocahontas region amounted to 21 days', compared with 37; the average supply in the Southern region was reduced from 48 days at the first of 1942 to 26 days' supply at the beginning of this year; the Northwestern region carried an average of 40 days' supply, as against 43 days' a year previous; the Central Western region was the only territory that showed an increase when the average days' supply amounted to 38, compared with 34 days' on January 1, 1943; and the roads in the Southwestern region topped the list with an average of 56 days' fuel supply, unchanged from the average supply as of the beginning of 1943.

Crossties—42,700,000 Stock—45,440,000 Used

Using the disbursements of the preceding 12 months as a measure of the crossties carried in stock by the Class I roads of this country, the dollar inventory as of January 1, 1944 represented an average supply of 9.8 months, compared with 7.7 months' stock at the beginning of 1943; 9.4 at the beginning of 1942; 11.0 at the first of 1941, and 10.2 at the beginning of 1939. Total disbursements of crossties by Class I roads amounted to approximately 45,440,000 units during the year 1943 and it is estimated that the number on hand at the beginning of 1944 amounted to approximately 42,700,000, or the equivalent of 11.3 months' supply, based upon the number of ties installed in track during 1943. The discrepancy between the results of these two methods of estimating the number of months' supply of crossties on hand, results from a number of factors, the principal of which is the difference in the average price of the ties in stock (which in many instances include substantial quantities of untreated ties) and the ties disbursed (which for the most part are treated ties and represent a considerably larger cost per unit). For instance, the average unit cost of ties on hand approximated $1.55 and the average unit cost of the ties disbursed was approximately $1.71. The number of months' supply was obtained by dividing the aggregate dollar inventory, which represented an average unit cost of $1.55 by the average monthly dollar disbursement which represented an average cost of $1.71 per unit, hence the result is substantially lower than the actual average number of month's supply obtained by dividing the number of units on hand by the average number used per month. It is important to note that neither of these methods involves any consideration of actual requirements based upon the physical condition of track, but both are merely statistical measuring sticks based entirely upon the disbursements during the preceding 12 months. Upon the disbursement basis then, the roads in the New England region, on January 1, 1944 had an averge supply of 14.9 months' stock of crossties, as compared to 8.7 the year previous; the roads in the Great Lakes region had an average of 12.4 months',



The Relation of the Total Value of Materials and Supplies on Hand at the Close of Each Year to Annual Revenues and Operating Expenses 1910-1943


MATERIALS AND SUPPLIES ON HAND UNITED STATES RAILROADS AS OF DECEMBER 31
Data includes class I, II, III and switching and terminal railroads and is not adjusted for differences in material cost
Millions of Dollars
Millions of Dollars
0
100
200
300
400
500
600
700
1912 1913 1914 1915 1916 1917 1918 1919 1920 1921 1922 1923 1924 1925 1926 1927 1928 1929 1930 1931 1932 1933 1934 1935 1936 1937 1938 1939 1940 1941 1942 1943

Materials, Supplies and Fuel Used in 1943 and Carried

Road	Fuel — On Hand 12/31/43	Fuel — On Hand Change	Fuel — Day's Stock	Fuel — Used 1943	Fuel — Used Change	Rail-New — On Hand 12/31/43	Rail-New — On Hand Change	Rail-New — Used 1943	Rail-New — Used Change	Rail-Old — On Hand 12/31/43	Rail-Old — On Hand Change	Rail-Old — Used 1943	Crossties — On Hand 12/31/43	Crossties — On Hand Change	Crossties — On Hand Month's Stock
		%			%		%		%		%			%	
Bangor & Aroostook	84,694	−57	46	671,515	−36	34,311	−4	$133,517	+24	$22,085	−22	$6,023	$40,073	−41	6.8
Boston & Albany	158,784	+25	14	4,094,041	+17	3,052	+354	139,810	+6	67,860	−24	65,597	90,704	+147	16.7
Boston & Maine	382,630	−28	19	7,292,822	+20	144,653	+243	484,468	−12	115,980	−42	325,250	804,103	+19	21.6
Central Vermont	383,530	−18	127	1,097,067	+29	4,785	−50	41,422	−2	48,537	−13	46,735	86,588	+17	42.9
Maine Central	83,233	−73	13	2,189,211	+17	12,588	−2	33,031	−51	51,474	−27	118,883	220,175	−17	9.4
N. Y. N. H. & H.	1,070,893	−30	43	9,031,654	+18	120,155	+3	790,969	−4	233,980	+181	4,02,600	636,218	+151	12.8
Rutland	64,627	−70	38	612,621	+13	6,962	−85	15,329	−6	29,110	..	9,372	52,869	−3	20.3
NEW ENGLAND REGION‡	2,228,391	−33	32	24,988,931	+19	326,506	+25	1,638,546	−6	569,035	+8	974,469	1,930,730	+35	14.9
Alton & Southern	18,431	..	35	191,877	..	29,101	..	26,352	..	11,076	..	3,996	34,788	..	18.4
Ann Arbor	66,249	−10	37	660,614	+19	111	0	....	..	15,950	+10	17,317	9,543	+38	1.8
Cambria & Indiana	1,220	−27	7	61,908	+	1,938	+535	10,414	+186	3,643	+68	4,151	3,534	−70	0.7
Delaware & Hudson	336,839	−34	29	4,236,307	+12	40,473	−43	460,338	−20	130,847	+1	111,944	752,799	+68	25.9
D. L. & W.	759,597	+17	40	6,841,677	+28	2,401	−48	445,561	+22	199,516	−22	299,013	617,136	+94	20.8
Detroit & Mackinac	12,265	−42	54	81,821	..	....	..	....	..	20,980	+20	19,824	13,327	−30	5.7
D. & T. S. L.	23,227	−27	51	163,902	+6	....	..	3,198	−30	6,106	−45	4,502	19,832	+515	7.8
Erie	778,879	+53	26	10,887,957	+42	162,119	−5	922,933	+1	217,018	−13	467,521	860,906	+90	13.2
Grand Trunk Western	697,385	−19	98	2,575,669	+19	10,995	+68	315,266	+34	183,705	+12	170,594	314,738	+65	7.1
Lehigh & Hudson River	20,317	−41	25	286,867	−7	3,554	−64	23,605	−35	7,815	−49	5,484	24,370	+200	5.6
Lehigh & New England	92,987	+7	77	435,633	+5	35,016	+37	72,956	+55	26,106	+26	41,855	23,803	−37	8.7
Lehigh Valley	435,487	−26	21	7,298,184	+22	53,211	+131	371,296	+16	204,489	+39	287,041	353,384	+53	8.0
Monongahela	4,830	−56	8	213,158	+10	5,423	..	21,576	+7	12,096	−28	19,702	19,556	+71	2.0
Montour	7,859	+27	16	173,727	−30	3,322	−64	5,824	−68	577	−84	296	1,483	−39	0.1
New York Central	2,309,368*	+19	22	37,917,960*	+35	1,842,945*†	+14	6,939,384*†	−8	Not Sep.	..	Not Sep.	5,623,546*ǂ	+12	11.5
N. Y. C. & St. L.	404,886	+25	20	7,077,281	+20	36,898	+101	416,673	+13	132,066	−10	280,381	1,323,206	+123	19.5
N. Y. O. & W.	49,802	−75	16	1,086,523	+11	6,849	+10600	36,819	+893	13,165	+4	19,949	79,698	−14	17.0
N. Y. S. & W.	23,712	+1	37	230,194	−3	9,039	+21	27,792	+106	25,615	−36	10,067	11,359	−57	9.1
Pere Marquette	486,905	+8	36	4,920,719	+34	16,138	+14	396,450	+26	163,364	−4	333,520	1,135,963	+77	18.6
Pittsburg & Shawmut	7,717	−4	27	103,789	+32	246	−83	26,244	−32	2,295	−81	12,777	22,947	+75	4.9
Pittsburgh & West Virginia	36,234	..	34	384,209	..	9,815	..	51,733	..	13,119	..	11,449	21,750	..	3.7
Pittsburg, Shawmut & Northern	1,490	−36	4	121,275	+24	13,514	+1450	4,006	−97	4,267	+143	3,620	3,621	+175	1.1
Wabash	297,220	−27	22	4,846,056	+14	33,533	−59	423,496	..	145,750	+15	406,350	451,052	+31	7.4
GREAT LAKES REGION‡	6,872,906	+2	28	90,796,407	+30	2,310,546	+12	11,001,916	+9	1,539,565	−1	2,531,353	11,720,141	+38	12.4
Akron, Canton & Youngstown	5,651	+28	8	247,834	+33	3,093	+32	13,316	+50	2,665	+38	5,462	60,575	+56	8.2
Baltimore & Ohio	1,525,798	+7	26	21,654,010	+26	117,811	−32	1,616,716	+29	358,502	+35	780,740	1,912,596	+99	4.8
Baltimore & Ohio Chgo. Term.♦	54,618	−37	35	566,648	−7	24,418	+143	51,208	+80	4,870	+6	9,913	33,713	+11	10.5
Bessemer & Lake Erie	139,839	−21	63	800,001	+17	53,156	+924	41,768	−76	30,542	−40	42,857	24,361	+79	4.1
Central of New Jersey	318,920	−33	22	5,211,664	+17	9,282	−50	287,460	+6	33,434	+84	237,124	351,144	+36	13.7
Chicago & Eastern Illinois	185,190	+30	35	1,921,290	+61	12,152	+10	223,506	+11	93,104	+17	188,330	165,771	+12	6.7
Chicago & Illinois Midland	39,665	−35	65	221,478	−14	4,800	+17	71,568	+72	12,580	+237	58,041	102,844	+5	17.9
Chicago, Indianapolis & Louis.	126,475	+72	77	597,441	+30	74,902†	−34	173,618†	−71	Not Sep.	..	Not Sep.	74,526	+1	13.0
Detroit, Toledo & Ironton	30,615	−47	26	430,546	+22	82,347	+86	41,462	−43	64,628	+48	22,614	125,922	+20	29.14
Elgin, Joliet & Eastern	106,416	−2	33	1,175,906	+6	20,498	−77	246,196	+8	76,262	+59	72,640	336,872	+21	26.6
Illinois Terminal	6,018	−55	21	103,073	+3	664	+358	51,204	−24	8,763	−16	31,272	70,606	+4	12.3
Long Island	91,287	+16	21	1,554,644	+29	16,716	−92	170,162	−32	72,364	+120	133,970	92,992ǂ	−33	2.6
Pennsylvania	3,737,167	−29	27	49,612,260	+39	451,698	+23	4,685,920	−8	1,101,585	+14	2,982,490	4,234,893ǂ	+36	9.4
Penn.-R. S. L.	36,856	−24	22	596,538	−5	7,781	+106	8,973	+14	17,545	+8	34,018	96,947ǂ	+58	9.3
Reading	653,622	−16	33	7,226,242	+12	37,926	+7	284,108	+50	9,749	−69	63,383	646,748	+77	11.3
Staten Island	8,565	+48	35	87,739	+27	....	..	....	..	10,540	−9	10,574	4,476	−77	2.1
Western Maryland	183,848	+24	32	2,119,203	+16	10,809	−35	314,717	+24	11,236	−48	113,328	363,081	−7	18.1
Wheeling & Lake Erie	66,243	−20	20	1,224,439	+11	45,566	+15	275,917	−8	111,347	+24	111,929	102,394	−30	6.7
CENTRAL EASTERN REG.‡	7,262,175	−19	28	94,784,308	+30	949,201	−30	8,506,611	0	2,014,936	+19	4,888,742	8,766,817	+38	8.1
Chesapeake & Ohio	263,567	−57	10	9,079,785	+25	46,269	+134	1,387,734	+24	206,522	+66	1,207,766	1,125,380	+63	12.9
Norfolk & Western	552,292*	+12	30	6,660,000*	+16	177,259*†	+88	1,212,083*†	−31	Not Sep.	..	Not Sep.	770,445*	−10	22.0
R. F. & P.	133,152	−34	20	2,376,105	+32	37,927	+228	67,845	−43	24,834	−40	106,147	277,132	+45	10.0
Virginian	177,267	−10	49	1,309,337	+14	60,999	−23	207,768	−46	97,741	−33	147,441	588,896	+39	33.7
POCAHONTAS REGION‡	1,126,278	−31	21	19,425,227	+21	322,454	−16	2,875,430	−1o	329,097	+5	1,461,354	2,761,853	+27	17.6
Atlanta & W. P. Sys.	186,800	−47	33	2,013,947	+38	5,926	−28	172,201	+19	56,309	+16	113,560	481,569	+100	18.9
A. B. & C.	45,513	−68	30	550,701*	+1	147†	..	59,931*†	−66	Not Sep.	..	Not Sep.	149,377*	+361	15.7
Atlantic Coast Line	951,C04	−37	34	9,923,182	+24	50,357	−9	678,474	+59	57,103	−76	469,573	293,781	−30	1.5
Central of Georgia	146,930	−5	23	2,378,359	+29	67,926+	1244	355,525	+79	82,276	+7	193,436	324,374	+17	7.6
Char. & W. Carolina	34,745	−33	35	357,800	+16	....	..	32,635	+2	4,314	−60	21,884	3,062	−71	0.2
Clinchfield	50,640	−18	26	702,287	+7	29,804	−32	132,235	+59	15,677	+60	22,019	25,666	−69	2.2
Col. & Green.	6,941	+104	27	60,2C6	+2	60,2C6	+25	36,485	+3	10,992	+166	5,518	12,965	+513	2.4
Florida East Coast	179,943	+93	27	2,430,431	+59	179,018	+151	323,392	−23	139,383	−12	126,378	479,692	+12	14.9
Georgia & Florida	56,633	−18	460	44,982	−74	....	..	....	..	10,797	−16	11,586	28,711	+54	2.7
Gulf, Mobile & Ohio	186,733	−7	38	1,764,371	+18	33,254	+203	206,717	−45	45,563	−42	156,963	894,150	+352	10.2
Gulf & Ship Island	1,561	+20	2	232,415	+16	....	..	....	..	17,132	+333	28,495	56,864	+585	5.9
Illinois Central	506,516	−36	13	13,975,349	+21	210,034	+2	2,132,547	+2	486,501	+8	973,814	1,017,009	+93	3.7
Louisville & Nashville	578,655	−36	21	9,841,963	+21	495,208	+210	1,502,153	+45	321,647	−15	1,139,755	1,852,741	−13	9.9
Mississippi Central	3,590	−71	17	75,458*	+19	6,097	+1617	27,625*	+18	5,312	+36	....	17,119	−8	3.3
Nashville, Chattanooga & St. L.	188,581	−18	26	2,577,729	+44	86,244	+73	361,704	+37	103,824	−19	176,100	804,842	+71	16.5
Norfolk Southern	43,239	−62	30	512,525	+16	....	..	....	..	71,719	−29	6,789	49,721	+42	1.5
Seaboard	946,371	−26	39	8,716,980	+23	243,907	+99	666,798	−10	266,535	+17	473,920	996,812	+265	5.8
Southern	1,156,925	−38	25	16,804,683	+18	334,922	+205	2,161,657	+13	368,301	+3	1,158,517	859,667*	−11	3.2
Tennessee Central	19,223	−6	29	240,516	+11	....	..	44,368	−38	....	..	53,171	24,357*	+43	2.8
SOUTHERN REGION‡	5,290,543	−32	26	73,238,376	+22	1,803,050	+102	8,895,447	−11	2,063,385	−12	5,131,378	8,363,379	+37	5.9
Chicago & North Western	687,384	−4	33	7,527,430	+14	69,141	+55	839,156	+23	553,666	+10	716,719	1,957,549	+50	16.3
Chicago Great Western	175,960	+33	27	2,331,987	+36	15,704	−72	166,682	−12	17,377	−35	103,418	244,252	+68	8.1
C. M. St. P. & P.	746,637	..	23	11,967,401	..	....	..	2,243,528†	..	441,948	..	Not Sep.	3,483,979	..	12.0
C. St. P. M. & O.	130,439	−11	18	2,631,223	+11	52,387	−35	190,536	+143	104,889	−12	173,222	391,082	+47	11.8
Duluth, Missabe & Iron Range	614,903	+29	107	2,102,617	+11	136,922	+6	168,798	+15	46,596	−42	185,487	375,526	+58	12.1
Duluth, Winnipeg & Pacific	818	−36	1	285,523	+41	28,173	−18	6,122	−61	8,249	−44	5,636	2,315	−87	0.2
Duluth, South Shore & Atlantic	271,433	−37	252	391,873	+8	1,899	−7	20,748	−17	28,390	+30	10,073	26,724	−53	7.7
Great Northern	2,012,037*	+20	67	10,880,690	+26	652,526*†	+18	766,178	−8	Not Sep.	..	664,597	2,428,065*	+35	9.5
Lake Superior & Ishpeming	74,264	−38	203	133,753	−7	3,123	−11	324	−72	38,454	−16	7,184	23,904	+65	11.5
Minneapolis & St. Louis	99,726	+52	47	768,608	+24	81,237	+562	200,886	+16	80,986	+63	111,331	165,926	+1	8.2
Soo	346,676	−7	35	3,543,281	+14	24,630	−19	390,766	−8	200,958	+13	144,960	567,361	+40	11.3
Northern Pacific	441,740	+25	20	7,880,535	+18	309,954	+26	1,438,289	+4	492,130	+13	660,920	1,770,161	+7	11.8
Spokane International	1,258	−74	4	100,043	+51	203	−11	40,661	..	22,905	+46	11,271	20,995	−24	3.6
Spokane, Portland & Seattle	120,638	+80	28	1,589,140	+38	106,974	+814	856,904	+14	266,306	..	40,220	477,433	+54	14.7
NORTHWESTERN REGION‡	5,723,913	+10	40	52,133,604	+21	1,482,873	+11	7,348,578	+23	2,302,854	+53	2,834,948	11,975,272	+34	11.5
Alton	232,497	+154	41	2,072,955	+15	104,593	+197	310,378	−14	106,874	+74	111,307	204,179	−16	5.6
Atchison, Topeka & Santa Fe	4,405,180	+43	55	29,327,903	+33	1,485,422	+106	3,662,335	+78	1,253,922	+70	1,426,007	4,356,836	−8	20.0
Chicago, Burlington & Quincy	621,751	−27	28	8,C25,284	+30	112,427†	−56	1,139,996	−15	Not Sep.	..	804,310	3,515,526	+35	12.3
Chicago, Rock Island & Pacific	796,049	+105	25	11,301,762	+43	451,142†	+38	2,306,498†	+22	Not Sep.	..	Not Sep.	1,414,154	+29	12.2
Colorado & Southern	159,870	+14	58	998,925	+28	1,197	−25	254	+2	24,508	−43	146,165	121,883	+18	8.3
Denver & Rio Grande Western	434,900	+143	29	5,555,424	+47	25,381	−74	457,094	+49	173,914	+83	229,763	462,186	+120	22.7
Fort Worth & Denver City	220,411	+82	87	921,748	+66	337	−34	153	−81	36,120	+113	52,013	120,115	+79	6.8
Nevada Northern	36,994	+123	94	144,125	−6	10,814	−23	12,279	..	1,618	..	3,612	76,193	+73	22.4
Northwestern Pacific	72,132	+46	71	368,573	+24	....	..	....	..	4,665	+1043	66,632	96,403	+345	7.1
Peoria & Pekin Union	16,505	..	57	105,537	..	9,506	..	12,100	..	3,788	..	11,864	27,988	..	27.7
Southern Pacific	2,848,851	+47	34	29,904,680	+15	169,750	−56	2,807,832	+14	693,339	+19	1,068,008	567,177	−19	3.0
Toledo, Peoria & Western	48,205	+44	89	196,622	+84	10,072	−42	7,192	−54	12,414	−8	4,781	22,309	−52	7.0
Union Pacific	2,462,788*	+30	31	28,900,399*	+26	774,947*†	−48	4,977,266*†	+12	Not Sep.	..	Not Sep.	2,881,812*	+75	14.4
Utah	3,464	−98	13	96,811	+35	25,912	0	....	..	3,813	−15	70	51,647	−4	37.1
Western Pacific	228,800*	+71	38	2,172,069*	−22	254,400*†	+114	351,370*†	−17	Not Sep.	..	Not Sep.	455,900*	+257	30.7
CENTRAL WESTERN REG.‡	12,588,397	+41	38	120,092,717	+26	3,435,900	−1	16,134,747	+20	2,314,975	+37	3,924,532	14,374,308	+23	12.7
Kansas City Southern	597,252	+49	84	2,586,336	+37	52,865	+2371	488,224	−12	113,745	+75	175,719	1,023,499	+189	13.3
Kansas City Terminal♦	20,740	−1	14	505,921	+52	19,729	+63	29,595	+8	817	+24	12,024	57,111	+73	19.9
Louisiana & Arkansas	307,223	+157	119	941,174	+40	64,507	+81	297,690	+65	50,770	−28	155,533	517,047	+246	6.0
Missouri & Arkansas	2,312	−74	4	180,384	+34	....	..	....	..	6,253	+32	959	7,152	−5	1.0
Missouri-Kansas-Texas	674,004	+108	47	5,179,821	+49	78,607	+2384	790,441	+160	243,903	+155	487,727	782,042	+123	4.2
Missouri Pacific	689,403	+24	25	10,172,196	+38	60,402	..	1,037,244	..	487,914	−23	1,184,088	1,087,946	−39	11.0
St. Louis-San Francisco	759,521	−2	32	8,562,391	+36	283,221†	−54	572,692†	−19	Not Sep.	..	Not Sep.	734,338	+501	6.5
St. Louis Southwestern	901,644	+12	95	3,477,688	+43	151,803	+146	378,270	+5000	130,072	+34	184,593	894,525	+90	7.8
Terminal of St. Louis♦	95,021	−48	38	910,774	+14	75,921	+278	96,583	−3	19,158	+85	35,826	25,846	−13	5.7
Texas & New Orleans	1,043,463	+36	52	7,264,767	+43	48,402	−49	860,121	−24	223,435	−32	734,214	675,005	+19	5.4
Texas & Pacific	1,531,566*	+93	142	3,935,823*	+73	113,863*†	+136	540,217*†	−31	Not Sep.	..	Not Sep.	701,190*	+80	8.5
SOUTHWESTERN REGION‡	6,506,388	+44	56	42,298,581	+43	853,670	−2	4,964,899	+21	1,256,092	−9	2,022,833	5,923,253	+60	7.2
Grand Total‡	$47,598,991	+1	33	$517,758,151	+27	$11,484,200	+5	$61,366,174	+11	$12,389,939	+13	$24,669,609	$65,815,753	+35	9.8

* Estimated ♦ Not included in region totals ‡ Totals of line-haul roads as reported † New and Relay ǂ Cross and switch ties ▲ Excluding scrap not reported separately ♦ Including scrap not reported separately

n Stock on December 31, 1943 by Class I Railroads

Cross Ties Used		Stores Stock					Total—Less Scrap					Scrap				
		On Hand			Used		On Hand			Used		On Hand	Sold	Total on Hand	Ratio to Opr. exp.	
1943	Change	12/31/43	Change	Months' Stock	1943	Change	12/31/43	Change	Months' Stock	1943	Change	12/31/43	1943	12/31/43	%	Road
6.8	%		%			%		%			%					
$70,457	—14	$718,547	+12	10.4	$823,789	+13	$899,710	—7	5.3	$ 1,705,301	+20	$27,695	$52,432	$927,405	17.5	B. A. R.
101,606	—14	872,588	+7	6.9	1,514,076	+11	1,192,997	+11	2.4	5,915,130	+14	9,872	143,425	1,202,869	4.6	B. & A.
444,978	—27	3,256,907	+11	4.5	8,624,285	+9	4,704,273	+7	3.2	17,171,812	+11	24,683	766,878	4,728,956	7.8	B. & M.
24,223	—49	555,837	+23	6.2	1,064,766	+8	1,079,277	+2	5.6	2,274,213	+16	15,577	79,180	1,094,854	16.3	Cent. Vermont
280,950	—25	986,199	+3	5.2	2,257,670	+5	1,353,669	—16	3.3	4,879,745	+8	14,562	113,325	1,368,231	10.0	Me. C.
392,390	—16	5,916,821	+7	4.2	16,876,830	—2	7,978,067	+6	3.4	27,694,452	+1	112,966	1,140,451	8,091,033	7.2	N. Y. N. H. & H.
31,112	+169	312,367	—2	●10.6	352,488	+54	465,935	—20	5.4	1,020,922	+28	6,974	18,822	472,909*	11.4	Rutland
14.9																
545,725	—21	12,619,266	+8	4.8	31,513,904	+3	17,673,928	+3	3.4	60,661,575	+7	212,329	2,319,513	17,886,257	7.8	
18.4																
1.8	..	145,716	..	8.0	217,149	..	239,112	..	6.2	462,051	..	1,166	7,831	240,278	13.2	A. & S.
0.7	..	62,177	+6	5.5	512,404	+2	327,281	+4	3.1	1,252,512	+11	1,256	8,796	328,537	7.8	Ann Arbor
25.9	+53	47,628	—9	7.2	81,081	—13	58,848	+14	3.4	205,182	+7	483	10,287	59,331	4.5	C. & I.
20.8	—14	348,311	—14	7.3	5,003,549	+1	4,339,094	+15	5.1	10,160,449	+1	73,116	359,921	4,412,210	12.8	D. & H.
7.7	—28	355,449	+18	7.3	5,740,037	+8	4,513,353	+17	3.9	13,681,728	+16	50,211	870,378	4,563,564	8.1	D. L. & W.
7.8	+33	27,638	+11	6.4	118,141	—15	209,401	+5	10.1	247,444	—13	182	35,386	209,583	22.4	D. & M.
13.2	—24	30,202	—2	11.5	135,859	+14	179,817	0	6.3	337,663	+5	846	11,124	180,663	8.8	D. & T. S. L.
7.1	+10	778,578	+2	4.7	12,607,512	+6	7,041,120	+12	3.2	25,664,501	+19	293,471	1,656,393	7,334,591	7.0	Erie
5.6	+4	531,823	—4	7.3	3,040,836	—6	3,070,670	—3	5.5	6,634,188	+5	110,719	374,255	3,181,389	12.7	G. T. W.
8.7	+464	51,950	—14	5.8	170,590	—27	138,559	—15	3.0	538,496	—10	1,835	....	140,394	7.3	L. & H. R.
8.0	+3	32,810	—18	7.9	448,619	—4	476,802	—11	5.5	1,031,873	+1	10,308	25,285	487,110	12.2	L. & N. E.
2.0	+40	528,114	+7	3.9	7,695,885	+10	3,572,949	+7	2.6	16,180,520	+16	89,849	658,591	3,662,798	5.9	L. V.
0.1	..	80,226	—8	8.3	306,484	—21	255,361	—6	4.7	641,146	—8	1,436	9,723	256,797	8.3	Monongahela
11.5	—26	11,941	+8	8.5	274,800	+24	208,927	+2	5.3	466,588	+19	1,765	11,114	210,692	10.8	Montour
19.5	+8	5,862,744*#	+2	4.9	60,875,880*	+3	35,061,372*	+5	3.7	111,595,068*	+13	512,283*	8,486,976*	35,573,655*	7.4	N. Y. C.
17.0	+9	810,650	+24	4.2	7,016,054	+26	4,345,004	+42	3.3	15,601,039	+22	192,437	611,559	4,537,441	8.3	N. Y. C. & St. L.
9.1	—10	56,112	+4	7.9	642,897	—10	577,245	—20	3.7	1,842,300	—4	4,501	80,955	581,746	7.6	N. Y. O. & W.
18.6	—45	14,932	+55	27.8	103,239	—74	309,559	+23	9.6	386,224	—25	11,590	15,254	321,449	10.2	N. Y. S. & W.
4.9	+1	731,140	+2	6.5	3,917,315	—2	3,989,539	+17	4.6	10,359,124	+15	172,888	435,919	4,162,427	10.6	P. M.
3.7	+2	55,679	+15	8.0	133,873	+32	123,392	+9	4.4	332,362	+20	2,641	8,909	126,033	11.5	P. & S.
1.1	..	69,936	..	5.9	583,858	..	371,541	..	4.0	1,101,185	..	2,451	89,734	373,992*	7.1	P. & W. V.
7.4	+110	88,641	+7	17.3	61,364	—35	111,533	+25	5.8	228,685	—6	1,999	9,197	113,532	9.7	P. S. & No.
12.4	—1	722,158	—3	5.1	7,791,431	—4	4,287,611	+1	3.6	14,189,491	+2	20,561	162,026	4,308,172	7.9	Wabash
8.2																
11.271,276	+7	51,365,232	+5	5.2	117,538,867	+4	73,808,390	+9	3.7	233,139,819	+13	1,558,094	13,937,613	75,366,484	7.9	
4.8																
88,619	+3	216,419	+36	6.8	378,728	+11	288,403	+40	4.6	733,959	+16	3,211	11,178	291,614	10.7	A. C. & Y.
10.5																
4,707,551	+92	14,205,527	+7	3.3	51,395,170	+15	18,120,324	+12	2.7	80,154,187	+21	307,207	3,392,326	18,427,531	7.3	B. & O.
4.1	—32	38,521	+17	2.5	2,255,130	+16	662,761	+13	2.4	2,921,420	+10	21,308	142,839	624,069*	10.8	B. & O. C. T.
13.7	—32	71,024	—10	11.4	1,174,551	—30	1,366,673	—9	7.6	2,130,201	—21	10,649	89,666	1,377,322*	8.8	B. & L. E.
6.7	+20	305,517	+19	6.5	5,375,981	—9	3,656,907	+13	3.8	11,417,746	+3	48,590	216,076	3,705,497	8.0	C. N. J.
17.9	+48	294,651	—11	3.9	3,440,589	+14	1,576,203	—4	3.1	6,068,366	+26	37,963	209,315	1,614,166	7.6	C. & E. I
13.0	+30	68,586	—7	8.8	654,821	0	640,588	—6	7.1	1,074,494	+4	12,503	65,398	653,091	17.1	C. & I. M.
9.14	—3	68,688	+12	5.3	1,068,038	—18	728,320	+9	4.2	1,847,785	+2	40,000	192,077	768,320	8.8	C. I. & L.
26.6	..	51,234	..	10.4	668,267	—4	884,957	+14	8.7	1,214,123	—1	9,028	41,577	893,985	17.1	D. T. & I.
12.3	—40	151,963	+11	8.3	1,963,570	+13	1,912,140	+8	6.3	3,610,275	+4	114,759	378,372	2,026,899	8.0	E. J. & E.
2.6	—1	68,661	+1	6.4	671,605	—8	444,665	—1	5.7	925,815	—23	7,366	65,515	452,031	7.9	I. T.
9.4	+28	418,967#	—10	4.0	4,504,871	—8	1,811,404	—18	3.2	6,782,614	6	10,360	92,932	1,821,764	5.8	Long Island
9.3	—10	1,538,045	—12	3.6	123,909,603	—1	47,570,426	—11	3.0	186,589,106	+7	731,096	5,927,532	48,301,522	7.2	P. R. R.
11.3	—4	5,398,863#	—5	9.7	289,377	—9	393,572	+5	4.4	1,053,487	—6	5,084	26,020	398,656	4.1	P. R. S. L.
5.1	+26	124,581#	—5	6.2	11,353,390	—2	7,223,100	—1	4.4	19,610,256	+4	114,610	730,925	7,337,710	9.9	Reading
6.7	+1	685,133	+4	3.2	299,484	—7	103,814	—9	2.9	422,860	—13	11,272	35,526	115,086	4.8	Staten Island
		25,063	—31	5.3	3,415,362	—12	2,100,578	+8	4.0	6,203,171	—1	75,233	432,442	2,175,811	9.9	West. Maryland
	+1	240,561	+13	5.4	2,396,722	—15	1,422,418	—6	4.0	4,190,239	—10	10,804	237,796	1,433,222	9.0	W. & L. E.
	—34	1,096,868	—5													
8.1																
12,948,894	+16	71,251,363	—5	4.0	212,900,129	+2	90,244,492	—4	3.2	334,028,684	+9	1,549,735	12,144,673	91,794,227	7.5	
12.9																
1,040,141	—2	5,003,394	+3	3.7	16,135,782	+3	6,645,132	+2	2.7	28,851,208	+10	360,708	2,218,151	7,005,840	6.0	C. & O.
300,000*	+50	6,679,664*	—17	3.0	17,285,000*	+6	8,179,660*	—15	3.8	25,457,083*	+6	254,262*	Not Avail.	8,433,922*	9.0	N. & W.
329,576*	6	1,369,946	+18	9.3	1,761,871	+6	1,542,991	+15	4.7	4,641,544	+17	12,682	40,757	1,855,673	11.6	R. F. & P.
	—10	3,046,484	+24	11.6	3,145,723	—6	3,971,387	+20	9.4	5,019,401	—7	43,841	382,143	4,015,228	27.2	Virginian
17.6																
1,878,849	+4	16,099,488	—2	5.0	38,328,376	+3	20,639,170	—2	3.8	63,969,236	+7	671,493	2,641,051	21,310,663	9.2	
18.9																
15.7																
305,667	+7	992,289	+7	8.8	1,343,492	+10	1,723,893*	+19	5.2	3,948,867	+27	12,460	67,222	1,736,353	13.7	A. & W. P. Sys.
1.5	—27	113,940*	+33	6.9	556,430*	—8	516,514*	+10	4.8	1,281,002*	—15	7,751*	37,559*	524,265*	9.8	A. B. & C.
7.6	+42	2,287,625	—80	1.0	11,838,305	+7	2,351,347	—68	1.1	25,197,159	+17	80,184	906,752	2,431,531	2.9	Atlantic Coast L.
0.2	+16	505,750	+4	6.2	2,599,083	+10	1,970,441	+8	3.9	6,033,153	+20	45,203	272,411	2,015,644	8.7	Cent. of Georgia
2.2	+26	124,092	—76	1.6	331,912	—32	88,106	—75	1.2	868,332	—8	3,770	33,150	91,876	3.4	C. & W. C.
2.4	+31	136,765	+1	7.4	764,537	—13	595,774	—11	4.0	1,757,843	+1	18,528	107,813	614,302	9.9	Clinchfield
14.9	+6	62,995	+16	10.7	186,885	—12	258,490	+28	8.0	386,572	—6	1,771	15,439	260,261	20.7	Col. & Green
2.7	—10	385,841	—19	7.2	2,193,117	+22	2,309,616	—4	5.0	5,459,059	+29	56,077	105,971	2,365,693	14.2	F. E. C.
10.2	—1	125,265	+30	10.7	186,963	—5	262,367	+15	8.1	368,796	—28	2,561	5,224	265,428	16.1	G. & F.
5.9	•	1,056,079	—12	5.8	2,445,843	+6	2,344,229	+28	5.0	5,613,973	+3	....	286,208	2,344,929	9.4	G. M. & O.
3.7	+42	115,485	0	3.1	82,655	+33	97,082	+177	2.5	459,050	+33	655	....	97,737	4.3	G. & S. I.
9.9	+12	3,219,017	+14	4.6	29,777,271	+8	13,836,848	+14	3.3	50,077,998	+11	716,660	2,730,804	14,553,508	9.1	I. C.
3.3	+25	2,228,660	—10	6.0	15,439,063	+3	11,032,337	—10	4.3	30,151,594	+12	286,299	1,757,217	11,318,636	9.5	L. & N.
16.5	+19	62,100*	+50	9.8	129,800*	+19	138,975	+30	5.6	294,983*	+19	417	12,900*	139,392	12.8	Miss. Cent.
1.5	+112	584,860	+29	8.2	3,700,393	+38	3,741,591	+30	6.1	7,400,786	+43	20,496	174,327	3,762,087	14.2	N. C. & St. L.
5.8	+17	323,656	+23	10.9	623,051	+17	723,450	+2	5.9	1,468,021	+17	10,335	55,415	733,785	11.8	N. S.
3.2	+28	2,056,633	+6	5.0	13,286,535	+5	8,003,191	+12	3.8	25,200,866	+11	46,395	349,763	8,049,586	9.9	Seaboard
2.3	+2	3,134,393	+40	5.6	24,229,186	+16	14,105,961	+24	3.5	47,488,436	+16	313,683	2,644,351	14,419,644	8.0	Southern
	—27	122,524	+13	6.8	585,911	+12	376,919	+14	4.3	1,046,490	+7	Not Sep.	22,320	376,919	10.9	Tenn. Cent.
5.9																
16,947,347	+16	46,957,974	+1	5.1	110,290,432	+9	64,478,331	+1	3.6	214,502,980	+14	1,623,245	9,584,946	66,101,576	8.7	
8.1																
1,434,629	—19	7,333,527	+8	5.7	15,199,455	—6	10,601,267	+13	4.9	25,717,389	—2	182,757	1,328,661	10,784,024	9.8	C. & N. W.
12.0	—2	888,878	+27	5.3	2,006,225	+19	1,342,171	+26	3.2	4,966,864	+22	21,320	313,615	1,363,491	7.2	C. G. W.
11.8	..	3,482,130	..	7.5	19,371,736	..	16,923,616	..	5.4	37,064,795	..	480,385	1,015,988	17,404,001	11.9	C. M. St. P. & P.
12.1	—19	394,757	—20	4.6	2,387,288	—4	1,607,813	—10	3.3	5,777,026	+5	19,978	221,278	1,627,791	8.0	C. St. P. M. & O.
0.2	+30	370,367	—20	6.3	2,065,596	—2	2,266,852	—1	5.5	4,892,865	+8	18,894	161,882	2,285,746	11.4	D. M. & I. R.
9.7	+52	107,964	+39	7.6	190,974	+24	161,629	+4	3.2	596,219	+32	857	14,988	162,486	8.4	D. W. & P.
9.5	—7	82,099	+14	10.7	251,403	+7	594,033	+28	9.1	775,196	+3	3,463	26,706	597,496	19.5	D. S. S. & A.
11.5	+33	3,046,252	+10	9.5	14,278,314*	—21	16,409,331*	+15	6.6	29,635,941*	—2	Not Sep.	Not Avail.	16,409,331*	13.0	G. N.
11.3	—35	24,743	—10	7.0	289,348	+116	309,884	—17	8.1	455,352	+37	5,549	9,660	315,433	18.8	L. S. & I.
11.8	—31	240,852	+37	10.8	1,268,204	—8	1,579,685	+39	7.3	2,589,281	—1	25,125	143,588	1,604,810	15.8	M. & St. L.
3.6	—5	599,958	+10	7.5	3,585,611	—12	3,391,571	+12	4.9	8,261,676	—1	93,429	306,342	3,485,000	10.0	Soo
14.7	+2	1,794,975	+18	6.5	17,785,501	+10	12,710,419	+17	5.1	29,560,220	+11	302,539	1,370,516	13,012,958	14.1	N. P.
	+22	68,827	+120	11.8	141,148	—3	184,408	+66	6.1	361,950	+24	1,145	8,640	185,553	15.2	Spokane Int.
	—1	387,428	—9	23.6	748,654	+40	2,447,002	+22	8.1	3,622,346	+28	33,372	31,980	2,480,374	17.8	S. P. & S.
11.5																
12,393,533	+8	49,044,769	+4	7.4	79,569,457	+2	70,529,681	+10	5.4	154,280,120	+9	1,188,813	4,953,844	71,718,494	12.0	
5.6																
20.0																
12.3	—11	436,101	—21	1.8	5,650,481	+9	1,538,281	—1	2.1	8,581,232	+8	24,847	199,299	1,563,128	6.7	Alton
12.2	—11	2,512,521	+9	5.7	40,855,177	+2	30,998,336	+14	4.7	77,883,843	+13	113,422	1,245,166	31,111,758	12.1	A. T. & S. F.
8.3	..	3,426,103	+16	4.2	29,733,674	+18	14,479,608	+15	4.0	43,129,367	+16	536,296	2,229,986	15,215,904	12.3	C. B. & Q.
22.7	+7	1,381,083	+11	5.4	18,252,512	+25	16,986,448	+17	3.9	33,241,855	+30	271,896	1,896,856	11,258,344	10.7	C. R. I. & P.
6.8	+61	175,744	+230	3.1	1,441,115	+25	691,679	+71	3.0	2,762,203	+28	43,041	71,317	735,120	8.1	Col. & So.
22.4	+30	243,587	+6	2.5	19,573,192	+34	5,220,384	+17	2.4	26,059,060	+37	48,452	356,685	5,268,836	11.4	D. & R. G. W
7.1	+53	211,834	+49	4.0	1,924,004	+53	1,031,900	+60	3.0	3,109,812	+56	27,192	163,050	1,059,092	12.4	F. W. & D. C.
27.7	+15	40,775	—2	21.4	64,898	—17	241,515	+25	10.9	265,480	—5	4,432	3,531	245,947	69.4	Nev. No.
3.0	+37	162,107	—44	1.3	528,509	+25	230,968	+33	2.4	1,125,821	+28	814	38,143	231,782	4.6	N. P.
7.0		12,124	..	1.7	253,934	..	94,512	..	2.8	395,559	..	4,056	15,347	98,568	7.3	P. & P. U.
14.4	+7	2,207,418	+1	4.7	42,285,957	+24	20,906,184	+4	3.2	78,363,895	+19	265,315	690,654	21,170,499	7.0	S. P.
37.1	—21	38,084	+8	18.7	251,876	—40	487,578	+3	11.7	498,555	—34	4,432	30,247	492,010	23.3	T. P. & W.
30.7	—9	2,385,804*	—16	8.1	45,072,427*	+28	36,870,623*	—11	5.4	81,335,896*	+25	378,419*	178,182*	37,249,042*	12.4	U. P.
	—2	16,690	0	27.0	72,938*	—16	249,301	0	16.0	186,509	+3	135	Not Avail.	249,436	22.3	Utah
12.7	—45	177,900*	+15	8.0	3,074,421*	+2	3,002,900*	•	6.2	5,775,760*	—13	11,800*	Not Avail.	3,014,700*	10.8	W. P.
13.3	—2	13,527,875	—1	5.4	209,034,975	+19	127,229,217	+5	4.2	362,714,846	+20	1,734,949	7,118,463	128,964,166	10.6	
19.9																
6.0	+15	921,583	+34	6.6	3,140,000*	+35	3,528,341	+67	5.7	7,311,863*	+27	48,914	Not Avail.	3,577,255	13.7	K. C. S.
1.0	—10	34,277	+21	4.2	719,872	+14	353,553	+27	3.2	1,301,689	+25	9,041*	39,897	362,594	7.6	K. C. T.
4.2	+59	1,028,926	+20	4.5	3,190,685	+145	2,141,006	+59	4.5	5,615,988	+79	53,041	184,366	2,194,047	17.0	La. & Ark.
11.0	—2	82,445	—108	3.8	284,000	+169	100,174	+62	2.2	527,788	+64	86	3,644	100,260	5.3	Mo. & Ark.
6.5	+9	2,191,217	+23	4.8	9,585,963	+14	5,846,860	+44	3.7	18,235,169	+27	32,208	668,224	5,879,068	10.2	M. K. T.
7.8	—49	1,181,916	+5	5.8	20,130,984	+8	12,196,887	..	4.3	33,706,428	+7	37,842	830,422	12,234,729	9.8	M. P.
5.7	+91	1,354,096	..	2.7	12,970,166	+19	4,742,979	+7	2.4	23,459,345	+23	94,831	Not Avail.	4,837,810	6.5	S. L.-S. F.
5.4	+29	601,839	+18	8.5	4,071,169	—1	4,494,527	+24	6.1	8,711,560	+24	Not Sep.	Not Avail.	4,494,527	15.0	St. L. Southwest.
8.5	—2	53,852	+11	4.8	1,651,736	—21	877,508	+4	3.8	2,748,771	—10	871	77,169	878,379	8.6	Term. of St. L.
	—20	1,484,817	—9	3.8	11,079,926	+7	5,500,396	—2	3.0	21,423,845	+12	102,974	358,223	5,603,370	8.1	T. & N. O.
7.2	+74	978,841*	+12	8.3	6,537,242*	+12	6,880,025*	+30	6.8	11,992,123*	+27	Not Sep.	Not Avail.	6,880,025*	16.8	T. & P.
9.8	+5	9,825,680	+9	5.1	70,970,115	+15	35,231,195	+17	4.1	130,982,103	+19	269,896	2,044,879	45,601,091	20.4	
reporte	+8	90,339,179	+8	5.1	$870,146,2554	+8	8509,834,4044	+4	3.9	81,554,279,3684	+13	$8,908,554*	$54,744,882*	$518,742,958	9.2	

Annual Inventory of Materials on Hand as of December 31—Class I Railroads

Year	Fuel (000)	Days' Stock*	Rail—New and S. H. (000)	Months' Stock*	Cross Ties (000)	Months' Stock*	Stores Stock (000)	Months' Stock*	Scrap (000)	Months' Stock*	Total (000)	Months' Stock*
1929	$40,000	32	$45,000	3.9	$95,000	8.1	$292,000	3.5	$....	..	$472,000	3.8
1930	28,200	40	44,700	4.9	101,200	10.9	246,500	3.8	10,300	..	430,900	3.8
1931	23,600	31	49,250	8.5	86,150	11.7	203,131	4.4	12,200	..	374,331	4.5
1932	20,500	36	47,600	18.0	66,700	14.8	169,020	5.5	12,800	..	316,620	5.9
1933	17,950	37	33,600	14.0	50,950	13.0	178,091	5.7	10,700	..	291,291	5.8
1934	19,930	34	36,885	13.0	47,297	11.0	181,455	5.0	11,898	..	297,465	4.6
1935	22,218	37	34,275	11.7	42,020	9.9	172,059	4.7	9,427	3.1	279,999	4.3
1936	26,317	36	31,226	6.5	40,542	8.9	199,234	4.4	9,926	2.1	307,245	4.0
1937	30,812	39	31,123	5.6	54,622	11.5	256,361	4.8	12,356	2.1	385,274	4.2
1938	23,769	34	26,969	7.6	54,716	12.9	200,566	5.8	11,542	3.7	317,562	4.8
1939	21,778	33	25,552	5.5	51,359	10.2	216,996	4.9	11,151	2.6	327,236	4.2
1940	24,002	32	25,985	4.6	50,967	11.0	223,673	4.4	9,818	1.9	334,445	3.9
1941	40,040	45	23,986	3.7	48,426	9.4	338,839	5.5	8,808	1.8	460,099	4.5
1942	47,612	42	18,131	3.2	53,977	7.7	375,376	5.5	9,805	1.7	503,901	4.2
1943	50,221	33	22,342	3.1	67,964	9.8	382,566	5.1	9,628	2.0	532,721	3.9

* Days' or Months' Stock based on average consumption per day or month during previous twelve months.

compared to 9.7; the railways of the Central Eastern region averaged an 8.1 months' supply, compared with 6.9; those in the Pocahontas region had 17.6 months' supply, compared with 4.6; the Southern region had an average of 5.9 compared with 5.0 months' supply at the beginning of 1943; the Northwestern region's average supply was 11.5, compared with 9.5; the roads in the Central Western region averaged 12.7, compared with 11.0; and the Southwestern region's average stood at 7.2 months' supply on January 1, 1944, compared with 4.7 months' stock on the same day in 1943.

Rail Inventories Hit Bottom

Rail inventories in relation to the amount used during the preceding twelve months were at the lowest ebb since *Railway Age* began compiling detail inventory figures in 1929, and stood at 3.1 months' supply compared to 3.2 the previous year; 3.7 at the beginning of 1942; 4.6 at the beginning of 1941; and 5.5 at the first of 1940.

Stores stocks at 5.1 months' supply on January 1, 1944 showed a reduction from 5.5 months' supply a year before. In the New England region they averaged 4.8 months' supply, compared with 4.5; those of the Great Lakes region averaged 5.2, the same as at the beginning of 1943; the Central Eastern region's average stood at 4.0, compared with 4.3; this year's 5.0 months' average supply on the Pocahontas region roads, compared with 5.3 months' stock a year before; the Southern region's average showed a slight increase to 5.1, compared with 4.6; the Northwestern region's average stood at 7.4, compared with 7.2; the Central Western region increased to 12.7 from 11.0, and the Southwestern region's average rose to 7.2 months' supply on hand January 1, 1944, compared with 4.7 on the same day the year before.

Of 111 railways reporting detail inventory and consumption figures, 59 roads reported less fuel on hand on January 1, 1944, than on the same day in 1943 and 102 roads used more fuel during the year 1943 than they did during 1942. More new rail in stock at the first of this year was reported by 54 railways and 51 roads reported that they used more new rail during 1943 than they did during the preceding year. More crossties on hand were reported by 77 railroads but only 57 roads used more crossties in 1943 than in 1942. Sixty-seven roads reported more stores stock on hand as of January 1, 1944 than on January 1, 1943 and 64 railways reported greater disbursements of stores stock during 1943 than in the previous year.

The accompanying two-page table shows the annual consumption of materials, supplies and fuel and inventory figures on different roads, as reported to the *Railway Age* or as estimated in accordance with the indications shown. The percentage changes in inventory and consumption figures were determined by comparisons with the figures reported the year previous. The days' or months' supply on hand was computed by dividing the 1943 consumption figure by 12 to obtain a theoretical average monthly consumption and by dividing the result into the material balance figure.

Direct comparisons between the inventory figures of different roads must be tempered by several considerations which include accounting practices and methods of evaluating and pricing secondhand and reclaimed materials. Accounting practices are not wholly uniform by reason of differences in the manner of interpreting accounting rules of the Interstate Commerce Commission. Both inventory and consumption figures are influenced by individual or different practices in charging material and supplies out of stock, in disposing of unserviceable materials which are included in stock balances, and the pricing of secondhand and reclaimed materials. Comparisons are facilitated, however, by separating classes of materials that are governed by different policies and conditions or that are controlled by different departments. Also, uniformity has been promoted by including ties at treating plants and by specifying that materials reported as used should be restricted to the value of materials issued to close accounts. For further comparisons with inventory and disbursement records of previous years, reference may be made to the *Railway Age* of April 17, 1943; April 4, 1942; March 29, 1941; April 6, 1940; and April 15, 1939.

* * *

American Red Cross Photo

First Aid Training for Railroaders

At the Kenwood shops of the Minneapolis & St. Louis, an experimental Red Cross course proved so successful that the railroad now plans similar classes over its entire system.

Social Scientists vs. the Railroads

By an Economist

I READ with keen interest the editorial "A Neglected Area of Public Relations" on page 147 of the July 22 issue of *Railway Age*. For a long time, and as the result of personal experience, I have felt, as your editorial indicates, that the railroad industry was indeed missing an opportunity in its failure to establish better understanding by social scientists of its problems and accomplishments.

Students Given Opinions, Few Facts

I am employed as an economist on a state commission which has much to do with railroads, and conclusions arrived at by my studies have an important bearing on the fortunes of railroads. The background of training which I brought to my work is significant—because, probably, there are not a few others whose views of the railroads are of economic importance whose preparation has been not dissimilar to my own.

Prior to my position here I had graduated in economics and law from a university in this state and during the last two years at the university, while completing my law, I taught in the economics department and conducted some research in transportation. The lack of adequate material or facts (upon which students *should* be trained) was not so apparent to me at that time, but after a year or two in intensive study of one phase of railroad problems, I came to the startling realization that, slowly but surely, while in school I had been indoctrinated with the principles of socialization, without any real factual foundation to justify such a state of mind.

The lack of factual information in our instruction was appalling; the courses in the field of transportation were opinionative and therefore prejudiced; and most members of my class were in the end thoroughly narrowed and bigoted in their attitudes toward fundamental transportation and public utility problems. It was only after a year or two of experience in dealing with practical railroad problems, reading every bit of material available, and collecting actual facts and figures in this field, that I came to understand my past bias, acquired from misinformed instructors who had little data to support the conclusions which they were instilling into the minds of their students.

Request for Information Frowned Upon

This situation arises primarily because the usual university instructor in the field of economics is quite unfamiliar with anything practical. He writes in glittering generalities—the privilege of the student and theorist—and knows little more than the outline of the romantic history of railroading ("bloody," he calls it) together with what "information" comes to him from the New Deal research agencies in Washington. Unless *all* the facts are immediately available to him, he usually has neither the time nor money to carry his studies farther. I know of one university instructor who was refused permission to write to several railroad companies for certain data and information principally because it was felt his viewpoint would henceforth be prejudiced! A stigma, it was said, would attach to the department because of his letter merely requesting facts!

It is tragic that our private enterprise institutions, long the real builders of America, need constantly to propagandize certain elements in order to make secure our fundamental property rights. Nevertheless, it is true that our students are being rapidly impregnated with the corrupt doctrines from which socialization and totalitarianism spring—doctrines which would be difficult if not impossible either to attain or sustain, if instructors and students were as zealous for facts as true scientists should be. This unhealthy condition appears to me to obtain even more generally in the case of privately-endowed institutions than in state-owned universities. From my personal engagements in my part of the country, I know definitely that only one side of the case is being presented in most instances.

Honest Scholarly Inquiry Should Be Encouraged

Improvement on the part of the railroads' relations with those in the field of social science will not immediately or even eventually prove to be a complete cure-all for this condition. Nevertheless, making all the facts of interest to research students available to them—together with a real program of encouragement by the railroads of independent research in transportation—would undoubtedly be a wholesome corrective which cannot be applied too soon.

At the very least, an increase in independent research resulting from its definite encouragement—and from the ready accessibility of quantitative and historic facts which are now hard to get at or entirely unavailable—would serve as a counter-measure and as a brake upon the presently dominant attitude which seems bent on the blackguarding and destruction of existing institutions, for the sheer joy of destroying. I hope the railroads may heed your suggestion—and at least inquire into the magnitude of the harm they are sustaining from the nonfactual opinions being inculated about them through academic channels; and will then adopt remedial measures commensurate with the need.

I have, myself, wanted to do some writing on a phase of fiscal policy of the utmost importance to the railroad industry—but have held back because I have not felt that I had sufficient authoritative information at hand. I lecture frequently at two universities but have necessarily restricted myself to conclusions based upon the facts at my disposal. As long as the economic facts about the railroad industry are in harmony with the public welfare, the more completely they are placed within easy reach of conscientious researchers and teachers, the more quickly will error and misunderstanding about the industry be dispelled.

Books an Important Influence on Public Opinion

In your opinion that what is written about the railroads in authoritative books is at least as important to them as what is written about them in the press, you have certainly called attention to a fact of the greatest significance. I hope that your suggestion may impress railway executives and public relations departments—and that they will act upon it with vigor and without unnecessary delay.

Why Locomotive Boilers Foam*

Committee of American Railway Engineering Association studies mechanics of this phenomenon and that of carryover. Finds several factors are not yet well understood

LIQUID water may leave a boiler in any one of three ways: (1) as foam, (2) as small drops and (3) as slugs from splashing. Method (1) is probably the cause of the greatest trouble. The amount of water carried out by the second method can probably not be very great, while method (3) can be controlled fairly easily by the enginemen by maintaining the correct water level and by skillful acceleration of the train. Consequently, the first classification, foam, is given the most attention in this investigation.

The amount of foam formed on the surface of a boiling liquid depends primarily upon the volume-rate of evaporation and the composition of the liquid. It is obvious that if sufficient foam height is built up in a boiler, carryover will result.

It should be remembered that a locomotive boiler is a horizontal cylinder partly filled with liquid; that steam is being formed from end to end; and that it has to travel horizontally to escape through the dry pipe. Thus, the foam height in a locomotive boiler is different than it would be in a vertical cylinder with other conditions similar, since in the boiler the foam is building up into a smaller and smaller space. As the foam builds up, it restricts the space available for horizontal travel of the steam, so that, finally, foam is washed or swept out of the boiler horizontally.

A few generalities will aid in creating a mental picture of what takes place inside a boiler. There are many different designs of boilers, and exact figures on the rate of evaporation from different parts are lacking. However, 55 lb. of evaporation per hour per sq. ft. of direct heating surface has been fairly well established. The evaporation from indirect heating surfaces is established as about 10 lb. per sq. ft. per hour. Hence, it can be calculated that in modern, large locomotives, roughly 45 per cent of the total evaporation is from the firebox, combustion chamber and syphons, circulators or arch tubes, and 55 per cent from the tubes and flues.

What Takes Place in a Boiler

Naturally, evaporation from the rear portion of the tubes and flues is somewhat higher than from the front portion. The steam dome is located variously from near the back flue sheet to approximately half-way up the length of the flues. Consequently, the proportion of steam delivered from behind the dome is variable, ranging from half to three-quarters of the total amount. It is thus obvious that the location of the steam dome can have an important bearing on the amount of carryover.

Several other facts must be mentioned in this connection. In the vertical cylinder, the foam height depends upon the life expectancy of the liquid film around the steam bubble, and the volume rate of evaporation. In a locomotive boiler, the horizontal travel of foam depends upon the rate of evaporation from point to point, the available steam space, and the life expectancy of the liquid film. The horizontal travel rate of steam in the typical boiler with a normal water line is from three to five feet per second near the steam dome.

Causes of Variation in Foam Height

Since most of the evaporation takes place at the rear of the boiler, it would seem sensible to locate the steam dome well forward so that the foam would have a chance to collapse before reaching the dome. This expedient has been tried with varying success. If the engine always worked on level or ascending track, it would be well. However, locomotives sometimes have to work backwards up heavy grades, and if the steam dome is too far forward, steam space is seriously restricted at the dome location by the sloping water line, thus leading to trouble.

One further fact deserves consideration. At a steam pressure of 285-lb., the specific volume of saturated steam is about 1.61 cu. ft. per lb.; hence steam at this pressure has nearly 10 times the density of air, and consequently a much greater transport power to carry small drops or slugs of water, than has air. Likewise, water has a density of only 0.85 at 285-lb. steam pressure, so there is little comparison between the power of wind to blow raindrops around, and the power of high pressure steam to blow foam and drops around.

Since the performance of a locomotive boiler depends upon the foam height or upon the amount of foam created, as well as upon boiler design, it becomes important to consider the various causes of foam height. Most investigators of locomotive foaming phenomena have concerned themselves almost entirely with the concentration of various kinds of dissolved and suspended matter at the time the carryover occurs in a standard piece of apparatus at a standard operating rate. However, the committee believes that the investigation of foam height in a standard apparatus at a standard operating rate may be a better method of approach.

The construction and operation of high-pressure apparatus that will give an evaporation rate comparable to that in a locomotive are expensive. It can be calculated readily that the locomotive rate is nearly one gallon of water evaporated per square foot of water-line area per minute. At 285-lb. pressure, this represents an upward gas flow of 13.4 ft. per min. This volume rate can be reached at atmospheric pressure, by the use of a 500-watt heater operating in a tube of 2½ in. inside diameter. Five such tubes and heaters were assembled in one piece of apparatus. A constant water level was maintained by inverted bottle feeders, discharging to the boilers through rubber tubing.

It is established that temperature or pressure vari-

* This study, presented at the recent meeting of the A. R. E. A., was made by a subcommittee of the Committee on Water Service, Fire Protection and Sanitation, of which W. B. Leaf, research technician, Denver & Rio Grande Western, was chairman.

ations alone have little effect on foaming. Of course, the degree of conversion of bicarbonate to carbonate to hydroxide is much less at atmospheric boiling than at high pressure, but composition can be controlled by adding the correct amounts of pure chemicals.

The data on foam height for 150 gr. per gal. of various proportions of the three-component system sodium hydroxide, sodium carbonate and sodium sulfate, at a fixed evaporation rate, has been determined. These data are of great importance in that they show a large variation of foam-producing capacity with variable composition of dissolved solids.

In foaming investigations in the past, the amount of dissolved solids present was the first thing thought of as the controlling condition, and locomotive samples were usually analyzed only for such information. However, study has shown that 150 gr. per gal. of sodium sulfate give 1 in. of foam; the same amount of sodium carbonate will give 4 in., and of sodium hydroxide 3 in. And 30 per cent of sodium sulfate, with 35 per cent each of hydroxide and carbonate, gives 17 in. of foam for a concentration of 150 gr. per gal. These data are being checked by outside laboratories in their high-pressure experimental boilers.

The average boiler water contains sodium chloride, in addition to the other three components mentioned. Consequently, the foam height for mixtures of sodium sulfate and sodium chloride was determined. Sodium chloride gives no foam, but a 50-50 mixture of sodium chloride and sulfate gives 3 in.

A further set of compositions was investigated, wherein the sulfate was replaced by half chloride and half sulfate. As would be expected, the new diagram is similar to the previous one, starting at 3 in. of foam at the sulfate-chloride peak and gradually blending into the diagram at about 50 per cent alkalinity.

The usual operating range of composition for locomotives using lime-soda treated water is from 10 to 40 per cent alkalinity, with three-fourths of the alkaline material sodium hydroxide, represented by the area between B and C on the graph. Thus the graph shows a foam height of three to five inches for 150 gr. concentration. If wayside-treated water or an other supply containing bicarbonate is taken, the reaction between the bicarbonate and hydroxide produces carbonate, and the composition of the boiler water moves to the left on the graph, toward an indicated foam height of 5 to 12 in. Consequently, foaming is to be expected under these conditions, since only an inch or so increase in foam height may produce carryover.

How Suspended Matter Affects Foaming

Likewise, water containing much magnesium in solution will cause a similar shift in composition, since it uses up hydroxide in the precipitation of magnesium hydroxide. Also, if wayside-treated water is used over a district, the operating composition may be on the left side of the ridge. Then, if completely-treated water is taken, the composition may move to the right into a greater foam-producing area, and carryover will be experienced with no appreciable increase in dissolved solids. This change can be more rapid and complete than the change to the left.

This graph explains the oft-repeated statement that "waters won't mix." At present, however, there seems no easy answer to the problem. All of the foregoing information was obtained by using pure chemicals and distilled water for make-up.

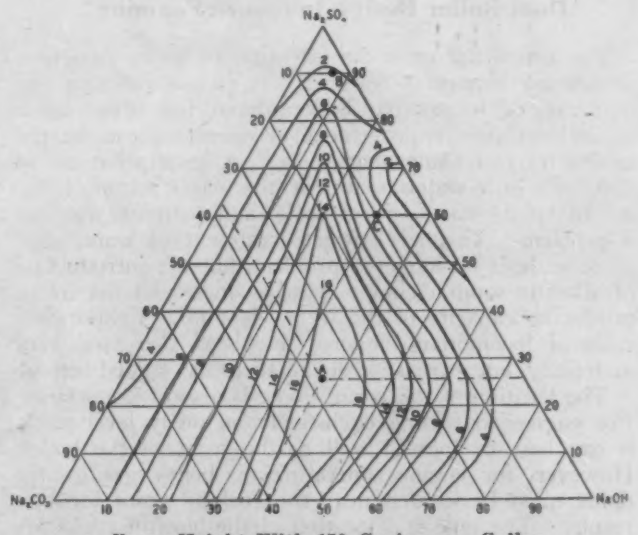
The effect of suspended matter on foam height has not been studied sufficiently by any investigator to permit many positive statements. A few observations are worthy of mention, however. When calcium carbonate is precipitated inside the boiler with high dissolved solids, the foam is very dirty. Yet, if a small dose of some form of tannin is added, the particles are wetted by the liquid and quickly sink out of circulation, with no change in foam height. Several-hundred-grain doses of colloidal bentonite clay have no effect on foam height. As much as 500 gr. per gal. of half calcium carbonate and half magnesium hydroxide in tap water produce no foam at the standard boiling rate, although a half inch or so of foam is produced at a lower boiling rate.

The published data on the effect of suspended matter in carryover must be questioned on the basis of the graph, because the investigators give no accurate data on the dissolved-solids composition before and after the addition of suspended matter.

One very important observation in connection with foaming has been made during this investigation. When foaming occurs, the steam bubbles are small from the instant they leave the heating surface. When no foam is formed, the bubbles are large. These statements are true, regardless of pressure or concentration. The phenomenon has been observed at pressures up to 300 lb., with variable compositions and concentrations, and with a great variety of materials used as antifoam compounds. All vegetable oils, such as butter, cocoanut oil, castor oil, etc., act with more or less efficiency as antifoam compounds. Cholesterol is an extremely efficient antifoam agent at atmospheric boiling temperature. Oils extracted from dried sewage also have antifoam properties, and, regardless of the compound used, if there is no foam, the steam bubbles are large; therefore, the action of antifoam compound extends all through the body of the liquid.

Emulsified-castor-oil antifoam compounds increase the surface tension slightly until saponification takes place, while cholesterol reduces surface tension. There seems to be no evidence that foaming is a function of surface tension, or that the action of antifoam compounds is based on surface tension changes.

Foam height may be increased by placing a fine screen



Foam Height With 150 Grains per Gallon

Explanation of graph. Composition represented at any point on the graph, such as A is determined as follows: For sodium hydroxide, follow dotted line downward to left and read 37 per cent. For sodium carbonate, follow the line upward to left and read 37.5 per cent. For sodium sulfate, follow the line to the right and read 25.5 per cent. Point B represents 90 per cent sodium sulfate, 6.5 per cent sodium hydroxide and 3.5 per cent sodium carbonate. Point C represents 60 per cent sodium sulfate, 30 per cent sodium hydroxide and 10 per cent sodium carbonate. All substances reported as such, and not in terms of calcium carbonate. Contour lines indicate inches of foam-producing capacity of the various compositions at a constant boiling rate.

in the path of the rising steam bubbles so that they are broken up into smaller ones. Similarly, foam height may be reduced by allowing the small bubbles to travel through an open-ended cone of suitable size so that they are forced together to form large bubbles. This action is effective in preventing foam formation in strong soap solution or sulfonated alcohol solution. It is also effective at high pressure, and an installation has been made on a locomotive, with good results.

What the Heating Surface Does

There is a further factor that influences foam height. This is the condition of the heating surface. If it is rough, or covered by a lot of fine, sharp points, the steam bubbles are smaller than they would be otherwise, and the foam height is greater. Also, a thin deposit of carbonate scale seems to increase foam height. This phenomenon has been demonstrated by slipping thin copper sleeves over the immersion heater. If the sleeve is smooth, foam height is lowered as much as one-fourth. If punched with a nail so that a lot of sharp points stick out, foam height is increased materially.

To return to the effect of suspended matter, it is highly probable that a misinterpretation of observations has been made. When foaming takes place, the bubbles are small and thus act efficiently to float the suspended matter. Consequently, the foam is always dirty, and the foaming may have been ascribed to the presence of suspended matter, rather than to an attendent phenomenon.

To study small and large steam bubble formations, several hundred feet of high-speed movies were made by the Edgerton stroboscopic process at Massachusetts Institute of Technology. This process uses a stroboscopic light instead of a shutter on a camera. The film was exposed at 660 frames per second. It shows that in liquids which form no foam, steam bubbles do not leave the heating surface until they are fairly large, ¼ in. or so in diameter. These bubbles also break together on first contact within the body of the liquid. With considerable foam, the bubbles come off the heating surface while small, and do not merge to form larger ones.

Does Boiler Design Influence Foaming?

The committee calls the attention of boiler designers to several important features. It is believed that the majority of locomotive boilers have too little steam space, and that improvement in operation can be obtained by increasing that space. A generation or so ago, with little water treatment, the major action of dissolved solids was to form scale, and foaming was not a problem. Through correct treatment of water supplies, scale is no longer a problem, but the introduction of alkaline sodium compounds has increased the foam-producing capacity of the water supplies. Evaporation rates of locomotives boilers have been increased very materially, but increase in steam space has lagged behind.

The location of the steam dome is also of importance. For engines operating exclusively on fairly level track, it can best be located well to the front of the boiler. However, for engines operating on heavy grades, the dome must be located near the rocking point for best results. The type and location of the blowoff cocks are also of great importance.

The use of tapered boilers and the location of the steam dome on a small diameter boiler course are to be condemned.

It is suggested that the graph be used in road investigations of foaming, to see how the laboratory work fits field conditions.

New Zealand as a Railway Market

By George G. Stewart*

ONLY someone on the spot, with an intimate knowledge of the history and economy of the countries concerned, can see the size of the openings and the scale of opportunities that lie ahead, even before the last shot is fired, for American railway exports to the lands which the men of the Stars and Stripes are helping to free from the Japanese menace.

Writing of one such country, New Zealand (a two-island "Dominion" somewhat larger than Great Britain, with rather less than two million population), it can be said that great new developments have already occurred, and further may be confidently expected, in consequence of the substantial influx of American soldiers, sailors and marines to this country, since Pearl Harbor plunged the United States into the midst of the World War.

Up to the present, the supply of materials for the New Zealand Railways—a State-owned system of over 3,000 miles, single track, 3-ft. 6-in. gage line, upon which 250 million dollars have been spent—has, naturally, been a private preserve of British manufacturing interests. This has continued ever since the lines were amalgamated in one centrally-controlled enterprise, 74 years ago. With the operation of Lend-Lease, both in "forward" and in "reverse," Britain's quasi-monopoly (a monopoly based as much on monetary obligations to Great Britain as on kinship with the "mother country") cannot be expected to continue.

Possibilities of Electrification

A temporary coal shortage has probably prevented the past year from creating an all-time traffic record on the New Zealand lines. That coal shortage unerringly points the finger to a major fault which extended electrification alone can remedy. Four short sections of track have already been electrified. Their total mileage only slightly exceeds 50 miles, but their institution, through the Lyttelton and Otira tunnels and on the Wellington-Paekakariki and Wellington-Johnsonville sections, has given unbounded satisfaction.

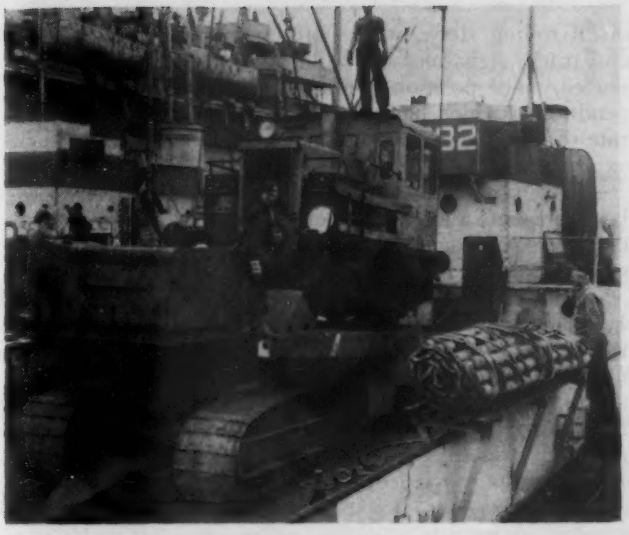
Other suburban areas served from the principal towns are overdue for equipment with this modern means of transport. Auckland City, with over 200,000 population, should have 100 miles of a double-track electric section, extending from Henderson in the north to Hamilton in the south. Out from Wellington, the capital city, 25 miles of the fertile suburban Hutt valley, now also a highly industrialized area, are tied down by an outworn steam rail service, where an occasional gasoline-driven rail-car only throws into glaring light the inadequate steam service provided for the several thousands who travel daily in this area.

The hydro-electric power potential of the South Island is great. This island is separated from its northern compeer, not by a Mason and Dixon line, but by a 20-mile width of ocean. There great mountain masses, heaving 200 of their peaks well above the 7,000 ft. mark, provide a plethora of rivers and lakes whose capacity for the

(*Continued on page 272*)

* Former editor of the New Zealand Railways Magazine which has been temporarily discontinued.

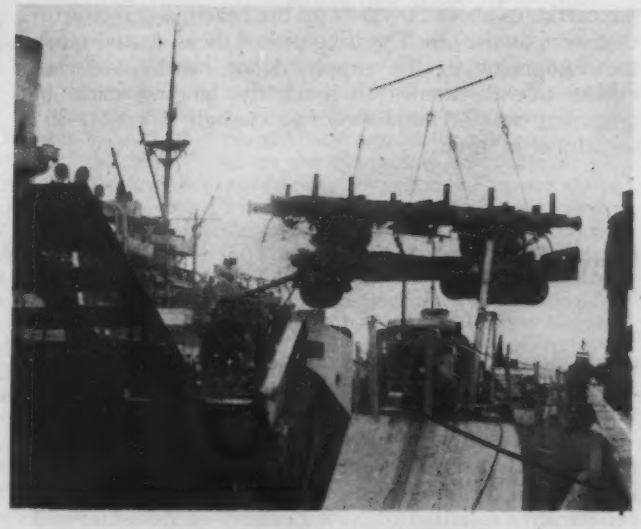
Landing Railroad Equipment Over a Beach



Diesel Locomotive Chained Onto Full-Track Trailer Which Carried It Through Surf to French Soil

MAYBE railroad rolling stock and motive power have been put ashore across beaches somewhere before—but such an operation can hardly be classed as routine. Anyhow, American forces invading Normandy were faced with the necessity of performing this feat. The locomotives were light Diesels (150-hp.) and the cars were 4-wheeled European-type vehicles of 20 tons' capacity—needed for work trains in the early stages of reconstruction of damaged French railway lines.

The cars and locomotives were shipped on LST vessels (i. e., ocean-going craft, specially designed to land tanks and other heavy motorized vehicles). Each locomotive was mounted on a full-track tank transporter and each flat car on a 40-ton flat trailer (see accompany-



A Flat Car and Its Pneumatic-Tired Trailer Undercarriage Are Swung Onto Shipboard Together

LEFT: A Diesel Locomotive on a Ship's Deck, with a Few Flat Cars, for Transportation to a Normandy Beach—RIGHT: European-Style Flat Car Firmly Lashed to a Massive Rubber-Tired Trailer for Movement Across the Beach

ing illustrations). Each LST craft used in the operation carried one locomotive and four flat cars, mounted as described; plus a heavy Caterpillar tractor for pulling the mounted equipment ashore.

Cranes lifted the mounted units aboard the vessels where members of a Transportation Corps railway shop battalion directed their placement. The tractor stood in the mouth of the vessel from where it could move down the ramp first.

The equipment was held in place by the ships' ropes, cables and chains, and turnbuckles. The rolling stock was lashed to its undercarriages by cables; and the ropes and chains tightened by turnbuckles and attached to deck rings kept both carriages and burden securely in position on the decks.

On reaching the beach, the vessel's ramp was lowered and the tractor pulled the equipment ashore. It hauled the carriages about 50 yards up the beach, where tractors that were on the beach waiting picked them up and moved the equipment to the supply depot nearby. A fast-ebbing tide threatened to beach the landing craft, but unloading was accomplished fast enough to enable it to withdraw in time.

New Zealand

(*Continued from page 270*)

production of electric power has hardly been tapped. Here the future may well require total electrification of railway lines to meet transport needs.

Apart from further electrification, to which the country is already to some extent committed, there is a growing demand for improvements in travel amenities. The comparative isolation of New Zealand—a thousand miles east of Australia, its nearest land associate—and its relatively small and scattered population, have tended to keep it behind other states in transport development.

For instance, although train journeys between principal centers often occupy 16 to 18 hours, and although 30 million passengers are carried annually, the only food or drink served on any train is a cup of tea, with a sandwich or bun, at 7:00 a. m., to passengers by sleeping car on the Limited express, which journeys six times a week, each way, between Auckland and Wellington. Even this must be arranged for the previous night. The distance is 426 miles and the time 14¼ hours. This run has been made by a four-wheel rail-car in less than nine hours. But instead of dining cars, the practice is to stop 20-odd minutes for breakfast, 10 minutes every now and then for tea and sandwiches, and about half an hour for a midday-meal.

In this and other things lie great opportunities for American engineers, designers, and salesmen—of all which classes there are plenty among the soldiers training in, passing through, resting and convalescing in this country—to show us how our train services can be used, improved and adapted to produce a standard of service for passengers and freight in some degree comparable with that to which they are accustomed in their own land.

How much does New Zealand spend beyond its own shores in stores, upkeep and development of its railways? In the past year the expenditures for these purposes would be in the vicinity of 30 million dollars. (The actual amounts for the fiscal year ended March 31 were not released at the time of writing.) Of this, probably 20 per cent would be spent on imported goods. Practically all materials, and much of the manufactured parts of all rolling stock, workshops manufacture and repair, and track, signaling and building metallic parts, are imported. The position is much the same with capital expenditures, which have doubled in the past 25 years, the rate of increase averaging about 8 million dollars of new expenditure yearly.

Australia with five times the population of New Zealand, presents a similar opportunity to American railway exporters, of course on a much larger scale. Australia mines iron and works steel, New Zealand does neither.

This Dominion belongs geographically to the Western Hemisphere but clings, on a 12-thousand-mile trade route, to the Eastern. The war has shown how sentiment and necessity are balanced between the Old and New Worlds; and if New Zealand is to make the best of both worlds, it is clear that in the supply of invention, stimulus and materials for the progress of the country's railways, America has much leeway to make up."

A Communication . . .

Truckers Better Than the Railroads at Propaganda

KANSAS CITY, MO.

TO THE EDITOR:

In the *Railway Age* of July 15 in the editorial entitled "How Pressure Groups Control Highway Policy" you discuss the response of the members of the Chamber of Commerce of the United States to the referendum recommendation that the federal government oust the states from control of maximum permissible sizes and weights of motor vehicles. You chide business men in general for their inconsistent attitude on subjects such as these as compared to their strong feeling toward the perpetuation of private enterprise. You conclude that the real purpose of the policy which the Chamber's members approve is to help truckers take traffic from the privately-owned railways.

I am interested in the general subject of this editorial in a wholly selfish way for the reason that truckers, that is, the itinerant variety, have made such serious inroads upon the business of established grain merchants who are accustomed to using railroad transportation. I am naturally in favor of allowing the states the fullest exercise of their present right to control sizes and weights of vehicles. However, I think that the entire subject bears a little further discussion.

It has been my observation that the referenda of the Chamber of Commerce of the United States are almost invariably approved by an overwhelming majority of the Chamber's members, and out of some acquaintance with the business-man type I can understand why this is so. Of course, those who frame the questions know the people to whom they are addressed, but also a good deal of affirmative voting comes after little, if any, consideration of the merits of the subject. Personally, I should not be willing to accept the results of one of these referenda as expressing a true cross-section of business thought.

In this particular instance it would be rather a natural thing for a business man to approve the idea of one responsible authority fixing maximum sizes and weights wholly in the interest of uniformity, and I doubt very much that many of those who favored the referendum had any idea that they were voting to help truckers using government-owned highways take traffic from the privately-owned railways.

I think you put your finger on the matter in the first paragraph of the editorial where you refer to the clever and persistent barrage of "trade barrier" propaganda. What I don't understand is why the railroads, who are in the aggregate as wealthy and powerful as truckers, do not meet this challenge by a more adequate coverage of counter-propaganda. As I observe the scene the truckers are leading the railroads by a big margin in the cultivation of public sentiment.

W. R. SCOTT,
Secretary, Kansas City Board of Trade

Railroads-in-War News

Army Men M. R. S. Directors in Orient

Brig. Gen. Yount is in command in India and Colonel Besson in Iran

Commanding officers of the Military Railway Service in the Mediterranean and European theaters of war (respectively, Brigadier Generals Carl R. Gray and Clarence L. Burpee) are railroad men turned military. In the Persian Gulf Command and the China-Burma-India theater, however, the background of the M. R. S. commandants is reversed—that is they were Army men first, and have subsequently acquired their familiarity with railroading as a parallel profession. The director of the M. R. S. in the Persian Gulf Command is Colonel Frank S. Besson, Jr., and, in the C. B. I. theater, Brigadier General Paul F. Yount.

Colonel Besson was born on May 30, 1910, in Detroit, Mich. He was graduated from the United States Military Academy in June, 1932, and was commissioned a second lieutenant in the Corps of Engineers. His first assignment was to the district engineer's office in Vicksburg, Miss. In June, 1934, he entered the Massachusetts Institute of Technology, being graduated one year later.

From 1936 to 1937 Colonel Besson took a company officers' course at Fort Belvoir, Va., and was then assigned to the district engineer's office in Portland, Ore. He returned to Fort Belvoir in 1939. In December, 1940, he went to Puerto Rico to test landing mats, and in January, 1942, was assigned to the office of the chief engineer. He was the assistant liaison officer for the War Department on the National Defense Research Committee in February, 1942, and became chief of the Development Branch, Supply Division, in October, 1942. In August, 1942, he went to England and from there to the Persian Gulf Command in February, 1944.

Colonel Besson was promoted to first lieutenant in September, 1935; to captain (temporary) in October, 1940; to major (temporary in February, 1942; to lieutenant colonel (temporary) in October, 1942, and to colonel (temporary) in February, 1944.

Brigadier General Yount was born in Alliance, Ohio, September 9, 1908. He attended the United States Military Academy and in 1930 was commissioned a second lieutenant, Corps of Engineers, and assigned to the district engineer's office in Buffalo, N. Y.

From September, 1932, to August, 1933, he attended a special engineers' school at Cornell University. In May, 1934, he was graduated from an engineers' school at Ft. Humphreys, Va., where he took a company officers' course. In August, 1934, he became an instructor at the United States Military Academy in the department of civilian and military engineering.

In February, 1938, General Yount was assigned to the Hawaiian department where he served until May, 1940, when he became assistant to the district engineer in St. Paul, Minn. While on duty with Headquarters, Military Railway Service, at St. Paul, he attended the conference on the activation of the 54th Engineers Railway Operating Battalion, in the Office of the Chief of Engineers, January, 1941. He was assigned to the railway section, Office of the Chief of Engineers, in January, 1941, for one month's temporary duty. In May, 1941, he inspected railway equipment and activities for use under the Lend-Lease Act.

His duties took him to Fort Belvoir, Va., in June, 1941, then to a post on the United States Iranian Mission and finally to Iran. From July, 1942, to September, 1942, he was with the Services of Supply, U. S. Army Forces, in the China-Burma-India Theater. In September, 1942, he became director of the Military Railway Service in the Middle East Theater of Operations. He returned to the United States in March, 1944.

General Yount was cited by Lieutenant General Joseph Stilwell, commanding the China-Burma-India theater "for exceptionally meritorious conduct in the performance of outstanding services as the commanding officer, Headquarters Base Section, No. 1, Services of Supply, China-Burma-India Theater, from March, 1942, to December, 1942." In April, 1944, he was awarded the Order of Kutuzov, Third Class, by the President of the Union of Soviet Socialist Republics for his outstanding work in the Persian Gulf Command.

On June, 1943, Major General Donald H. Connolly, Commanding General, Persian Gulf Command, lauded General Yount for his "not only technical, but personal qualifications to run a railroad under very difficult circumstances."

General Yount was promoted to first lieutenant in August, 1935; to captain in June, 1940; to major (temporary) in February, 1942; to lieutenant colonel (temporary) in March, 1942; to colonel (temporary) in May, 1942, and to brigadier general (temporary) in June, 1944.

Kilgore Committee Hearing Now Set for August 17

The subcommittee on war mobilization of the Senate committee on military affairs (the so-called Kilgore committee) has postponed from August 10 until August 17 the hearing at which it will receive the railroad industry's oral presentation in answer to charges that the carriers have not been receptive to the adoption and use of new technological developments.

Statistics Reflect Traffic Stability

While coastwise freight flow mars prewar comparisons, revenues tend to level

The normal flow of railroad freight traffic before the war was preponderantly eastward (including northward), and the disparity was more pronounced in the eastern territory than in the west. The effect of the war has been to accentuate the eastward preponderance in the eastern district but to reduce it in the west, according to the current issue of the Monthly Comment on Transportation Statistics of the Bureau of Transport Economics and Statistics of the Interstate Commerce Commission.

This result develops from the increased flow of traffic from the interior production centers to both the Atlantic and Pacific coasts, the additional wartime movement being supplementary to the prewar trend in the east, but opposed to it in the west. The eastbound movement, measured in loaded freight car-miles, in 1939 and 1940 ranged from 54.8 to 59.4 per cent of the total in the western district, while it varied from 62.0 to 64.3 per cent in the east, the bureau points out.

Traffic Equilibrium in West—In 1943 and 1944, however, the disparity had so increased in the east that eastbound traffic was never less than 66.4 per cent of the total, and in July of last year it reached 68.4 per cent. In the same period the movement in the west had almost reached equilibrium, varying from 50.0 per cent exactly in March, 1943, to 53.2 per cent last October. For certain individual western railways, the report added, the growth of westbound traffic has been so great as to make the per cent eastbound of the total loaded car-miles less than 50 per cent, although the same roads' peacetime business was over 60 per cent eastbound.

The extent to which all traffic is unequally distributed among the months of the year also was surveyed by the bureau. Such figures are important, it suggests, both from the standpoint of economy in the utilization of equipment and, for statistical purposes, in deriving seasonal factors to use in measuring the basic trend of traffic as shown by monthly compilations. From the standpoint of maximum use of equipment the most favorable condition, of course, would be to have the traffic equally distributed each day throughout the year. During the war, the bureau observes, the need for continuous maximum production tends to equalize the traffic, and so to approach this ideal, but in periods of rapidly rising traffic the difference between the early and

late months of the year is accentuated. The net result of these two opposing influences has been in the direction of greater equality, especially in the more recent months, as production has attained a relatively stable level.

Seasonal Peak Is Leveled—To demonstrate this situation statistically, the bureau sets forth a comparison of deviations of the various months from the peak month. Thus it shows that in the 1935-1939 period the revenue ton-miles in October, the peak month, averaged 33.38 billions, while in the other 11 months the average was 6.9 billions less, or 20.6 per cent, in contrast to the 1943 results, where the average for the 11 months was only 7.8 per cent under the October peak, or to the year ended with April, 1944, where the average for the 11 months was only 6.0 per cent under the October peak. The same tendency was illustrated in passenger-miles figures, although the approach to equality was not so close.

In reviewing the earnings picture, on the basis of June figures, the bureau finds that freight revenue continued at approximately the same level as for the three preceding months, the index, based on the adjusted 1935-39 average as 100, being 225.2. While a relatively high increase in freight revenue was reported, as compared with June, 1943, that is, some 6.6 per cent, this is explained at least in part by the "interruption" of coal mining that occurred last year, it points out. The passenger revenue for June showed some increase over the preceding months, which may be in part seasonal, the bureau says, but the rate of growth is less than last year, this being reflected in a continued decline in the per cent of increase over the same 1943 month which has persisted since February. The increase in passenger revenue over last year was only 8.3 per cent in June, as compared with 21.7 per cent as recently as March. The adjusted index figure, however, based on the 1935-39 average as 100, continued to show an increase, having reached 470.8 in June. Reserves for disputed land grant deductions set aside in the first half of 1944 totaled $23,984,159, as compared to $9,820,713 in the equivalent 1943 period.

Pullman Net Is Off—In view of the recent decision of Pullman, Inc., to dispose of the Pullman Company, pursuant to a court order, more than ordinary interest attaches to the bureau's review of current Pullman operations, which covers the first five months of 1944. In this period a substantial increase in Pullman revenues, resulting from an increase in travel, was more than offset by a greater increase in expenses, reflecting wage increases, in comparison with the same 1943 period. On the other hand, the resulting 20.8 per cent decrease in net revenue was, in turn, more than offset by a 26.9 per cent decrease in taxes, so that the operating income after taxes was 6.1 per cent larger in the first five months of 1944 than in the comparable 1943 period.

Other comparative figures for the five months ended with May this year and last year indicate a 14.7 per cent increase in the number of Pullman passengers, a 17.1 per cent increase in passenger-miles, a 10.3 per cent increase in car-miles, a 26.2 per cent increase in the number of employees, and a 44.0 per cent increase in the total payroll.

Pullman's Investment—The effect of the war on the Pullman Company has been to increase traffic, revenues, taxes, and net income. A higher level of dividends has been maintained. The investment in physical property increased moderately, but not as much as depreciation accruals, so that the net investment in physical property declined from $90,619,000 in 1939 to $69,814,000 in 1943. Other investments, largely government bonds, have increased, amounting to $53,266,000 in 1943. The company has no long term debt and since 1941 has reduced the amount of its capital stock outstanding by the purchase with surplus funds of 250,000 shares from the holding company, paying an average of $100.85 per share. The corporate surplus has increased from $15,045,000 in 1939 to $22,023,000 in 1943.

General Gray, Hoghead

On July 4, War Secretary Stimson and an equally-welcome visitor in the form of 25 carloads of coal, arrived in Rome, with Brigadier General Carl R. Gray, T. C., commanding the Military Railway Service, at the throttle.

General Gray had been riding with Secretary Stimson and his party in a rail motor car, which caught up with the coal train in the yards outside Rome. The general took over the engineer's job on the coal train—and the motor car and the coal train moved into the passenger station abreast, on parallel tracks.

The M. R. S. commander reports that, as a July 4 celebration, the railroad job at Rome was "just about as near perfect as it could be."

Grade Crossing and Trespassing Accidents on Radio Program

The regular safety program of the Safety Legion of America scheduled for September 19 at 5 p. m. over Mutual Broadcasting stations will be replaced by a special broadcast on rail-highway grade crossing and trespassing accidents. Young people throughout the nation will be asked to do their part to help prevent these types of accidents.

How the Army's Railroaders Took Over in France

How the soldier-railroaders who landed with the invasion forces in Normandy actually went about their job is revealed in a report from headquarters of the Army's European theater. The "advance section" of the railway battalions given this assignment landed first and "after establishing headquarters immediately began reconnaissance activities." This reconnaissance group included Brig. General C. L. Burpee, in command of the Military Railway Service in this theater.

The party moved about in jeeps, including a special rail reconnaissance jeep, the tires of which had been removed enabling it to run on its rims on the rails. Damage to the French railway system caused by bombings of the allied air forces and by the destructiveness of German rearguard actions was found to be quite extensive. Regions that had not been ruined by demolitions and bombings were heavily mined, and had to be cleared by army engineers.

In its searches along the American beachhead, the reconnaissance party found large quantities of serviceable equipment. Locomotives from several different countries have been discovered, including several World War I models. Box cars in good condition have also been captured plus tons of coal which is urgently needed for the steam locomotives.

French civilian railroad men returned to Cherbourg after the American occupation of the town and reported for work in the yards and roundhouse. They told of German plans to sabotage engines by running them, with full steam up, along a track that sloped into the channel waters. The impact of the cold water would cause the steaming engines to explode. However bombings by the allied air forces that destroyed the track leading to the water foiling the Nazi plan.

Sergeant Paul G. Domm of Altoona, Pa., a former P. R. R. employee, has the distinction of operating the tractor which pulled onto the Normandy beach the first shipment of American railroad equipment to be landed in France in World War II.

Jap-Americans Removed from I. C. by Federal Authorities

Fifty-nine Japanese-Americans who were assigned to the Illinois Central by the War Relocation Authority for track work on the Chicago Terminal were withdrawn by the Authority on August 4 and reassigned to other employment in the Chicago area. As reported in the *Railway Age* of August 5, the local of the Brotherhood of Maintenance of Way Employees threatened to strike unless the Japanese-Americans were removed from the railway.

J. L. Beven, president of the railway, in a summary of the case, said:

"To meet a shortage of manpower, the War Relocation Authority assigned 59 Japanese-Americans to the Illinois Central for track work on the Chicago terminal. The Brotherhood of Maintenance of Way Employees objected, and the Army requested that the men be taken out of service for further check of their records. This was done, and the check-up is now being made.

"Meanwhile the Illinois Central was notified today that these men would be withdrawn from the Illinois Central and reassigned to other employment in the Chicago area. This action was taken by the War Relocation Authority at the request of the men themselves. Their request was the result of the objections that were made to their further employment on the railroad.

"In addition to the objection made by the Brotherhood of Maintenance of Way Employees, the general chairmen of sixteen railroad labor organizations formally requested the Illinois Central to give no further consideration to the employment of these men because 'it is our profound and unanimous conviction that the injection of the Japanese evacuees at this time would profoundly disturb the morale of the employees

and would in all probability precipitate a condition for which neither of the organizations could assume responsibility and which they would be wholly unable to control.'

"The objections that were made to the employment of these men do not constitute a dispute between the Illinois Central and its employees. This is not a labor question involving railroad policy. It is a social question involving public policy. A railroad engaged in vital wartime operations is not an appropriate arena for the settlement of such questions."

Production of Transportation Equipment Behind Schedule

"Production of some of the principal items of transportation equipment for United States civilian use lagged seriously behind schedule in the first six months of 1944 although the output was considerably greater than in the first half of 1943," the Office of Defense Transportation reported on August 9.

Freight car production programmed for 1944 totals 52,547 cars, but in the first six months only 16,862 were built. The year's programs for medium, light-heavy, and heavy-heavy motor trucks call for 101,298 vehicles of which 32,680 were produced in the first half.

The accompanying table shows for railroad equipment the first half's production compared with 1943 and the programmed production for 1944.

	Production Jan. 1-June 30 1943	Production Jan. 1-June 30 1944	Total Production Programmed for 1944 including production first six months)
Locomotives			
Steam	197	189	323
Diesel Switch	94	261	521
Diesel Road (other than 5400-hp.) .	2	10	10
Diesel Road (5400 - hp.)	8	54	125
Total	301	514	979
Freight Cars			
Box	...	5,972	23,653
All Others...	...	10,890	28,894
Total	9,846	16,862	52,547
Troop & Kitchen Cars	...	939	939
Railway Marine			
Lighters & Scows	...	8	11

Says "Casual" Travelers Hinder War Production

While war plants, particularly on the Pacific coast, are seeking additional manpower to meet heavier production schedules and replace those who quit their jobs, "thousands of visitors" to production centers, many of them neither seeking essential jobs nor having any business connected with the war, are placing an "unnecessary burden" on transportation, housing and service facilities, according to Corrington Gill, director of the President's Committee for Congested Production Areas. This committee is described as representing the major procurement and government agencies concerned with war production.

At the committee's request, the Bureau of the Census has made sample censuses in certain war production centers to determine what portion of their recent population increases has been due to "casual visitors"—a term applied, it was explained, to "tourists and vacationers, organizations planning conventions, and families of service men."

Referring more specifically to the Pacific coast situation, Mr. Gill said: "There is a desperate need for war workers on the Pacific coast, particularly in the shipbuilding, aircraft, aluminum, rail transportation, construction, and lumber industries. . . . But while every effort is being made to recruit these workers, locally and interregionally, and while marked progress is being made in providing the necessary facilities for these workers, there is a kindred and needless problem created by those who heedlessly visit these heavily congested areas for purely personal and unpatriotic reasons, thus placing an unnecessary load upon trains and buses . . . and public utilities generally." Such persons, he observed, "should either go to the Pacific coast prepared to take war jobs or they should stay at home."

U. S. Railway Timetable in France

Timetable No. 1 for the United States Army Military Railroad in Normandy was issued July 17, for Major General Frank S. Ross, Chief of Transportation, E. T. O., by Colonel Norman A. Ryan, Assistant Chief of Transportation, Military Railways Division.

The timetable which took effect at "0001 double war time," Monday, July 17, 1944, lists scheduled trains and stations with mileage from station to station. Having been printed for the "information and government of military personnel," the table includes the following edifying footnotes: "Double track operation, normal current of traffic is to the right. Trains 1, 2, 3 and 4 will stop at all stations listed above. Eastward trains are superior to trains of the same class in the opposite direction."

Will Slash Rail Allotments

The War Production Board recently informed the Office of Defense Transportation that the tonnage of new replacement rail available for domestic railroads during the third and fourth quarters of 1944 will be cut substantially, by reason of reduced production and increased demands of other agencies of the Government. During the third quarter, said Colonel J. Monroe Johnson, director of the O. D. T., approximately 400,000 tons of rail will be allotted to the railroads under the new decision, compared with the 500,000 tons previously allotted and an original O. D. T. request for $550,000.

Decision on the fourth quarter allotment has not yet been made, Colonel Johnson said, but all signs at present point to a quantity somewhat less than that for the third quarter. Total new rails for the U. S. railroads during the year 1944 will amount to approximately 1,800,000 tons, which, although much below the O. D. T. stated requirements, is still greater than the 1,540,000 tons made available in 1943. As a possible means of minimizing the reduction in rail allotments, a canvass of the railroads

Officer Personnel, Headquarters, Second Military Railway Service, T. C., U. S. Army

On Duty in the European Theatre

Name	Grade	Present Duties	Former Employer
Burpee, Clarence L.	Brig. Gen.	Gen. Mgr.	A. C. L., Jacksonville, Fla.
Qualls, Everette H.	Colonel	Exec. O (Asst. Gen. Mgr.)	Bureau Motor Carriers, I. C. C., Nashville
Simone, William R.	Captain	Liaison O	Simone Travel Agency, Key West, Fla.
Hagelin, James W.	2d Lt.	Aide de Camp	C. M., St. P. & P., Duluth
		Administrative Department	
Conway, James W.	Major	Adjutant	Erie, Cleveland
DeLong, Neal T.	1st Lt.	Statistical O	Union Pacific, Omaha
Hand, Charles L.	1st Lt.	Asst. Adj. (Pers. O)	C., B. & Q., Chicago
Probert, John L.	W. O. J. G.	Asst. Pers. O	Acme Fast Frt., Cincinnati
		Engineering Department	
Elmes, William T.	Lt. Col.	Asst. Gen. Mgr. (Engrg.)	N. Y. C., Pittsburgh
Hauser, Kenneth D.	Lt. Col.	Chief Const. Engr.	Hauser Const. Co., Portland, Ore.
Johnson, Laurence V.	Major	Chief Maint. Engr.	Soo
Morgan, Harold P.	Major	Chief Maint. Engr., B & B	Pennsylvania, Phila.
Schaefer, Edwin J.	Captain	Signal & Comm. Engr.	A. C. L., Wilmington
Howard, Joseph C.	Captain	Supt. of Wk. Equip.	F. W. & D. C., Ft. Worth
Richmond, Joseph M.	1st Lt.	Supt. Water Service	Permatite Co., N. Y.
		Equipment Department	
King, Fay L.	Lt. Col.	Asst. Gen. Mgr. (Equip.)	C. M., St. P. & P., Milwaukee
Acker, Sidney H.	Lt. Col.	S. M. P.	St. L.-S. F., St. Louis
Oakes, Paul E.	Major	Supt. of Shops	C. I. & L., W. Lafayette, Ind.
Kilian, Rudolph C. P.	Major	Supt. Cars	N. Y. C. & St. L., Frankfort, Ind.
Ewin, Earl R.	Captain	Chief Elec. Engr.	C. M., St. P. & P., Chicago
Allen, Herbert V.	1st Lt.	Asst. E. E.	C. M., St. P. & P., Minneapolis
		Headquarters Company	
Buford, Curtis D.	Captain	Co. Cmdr.	.....
Morgan, Ralph N.	2d Lt.	Asst. Co. Cmdr.	U. P., Kansas City
		Stores Department	
Hartlaub, James L.	Captain	Skr.	N. Y. C., New York
Cross, George C.	Captain	Fuel Agt.	G. N., Minot, N. D.
Maher, Philip J.	W. O. J. G.	Asst. Fuel Agt.	Gulf Power Co., Pensacola, Fla.
		Transportation Department	
Mulick, George J.	Lt. Col.	Asst. Gen. Mgr.	U. P., Omaha
Slade, George N.	Major	Gen. Supt. Transp.	T. R. R. A., St. Louis
Stone, Boyd W.	Major	Gen. Supt. Terminals	N. P., Missoula, Mont.
Hargrave, Everett W.	Captain	Supt. Car Sv.	Mo. P., St. Louis
Phillips, Edmund J.	Captain	Supt. T. & T.	P. R. R., Chicago
Byrnes, Thomas G.	1st Lt.	Asst. Supt. T. & T.	Ill. Term., St. Louis
		Attached	
Nilson, Horace S.	1st Lt.	Liaison O	C. M., St. P. & P., St. Paul
Morris, William C.	Lt. Col.	Liaison O	

is being started to uncover possible supplies of fit relay rails which might be suitable for application where required, and thus lighten somewhat the demands of others for new rails.

Consignees Urged to Clean Cars for Reloading

The Ohio Valley Transportation Advisory Board has sent a circular to shippers and receivers of freight in that district which shows photographs of the interiors of three cars—each so badly littered from a preceding use that they were unfit for reloading without a trip to the cleaning track. The circular states that the pictures are photographs of cars in the condition left by consignees—requiring a cleaning job which entails a detention of one or two days per car. Because of the urgent need for cars, the Ohio Board urges its members to see to it that no cars are left in such condition —but that consignees instruct their employees to remove all "bracing, blocking, steel scrapping, paper and other debris."

Outlines Work of Resources Board's Transport Group

The Transportation Equipment Committee of the Combined Production and Resources Board "will survey the rail, port and inland waterway transportation needs in the liberated areas during the relief period," according to an August 10 announcement. As noted in the *Railway Age* of July 8, page 92, the recently-organized committee is headed by Brigadier General Charles D. Young, deputy director of the Office of Defense Transportation, the other members being Sir Walter Venning, director general of the British Supply Mission in America, and R. A. C. Henry, formerly deputy minister of railways and canals of Canada.

"The new committee," said the announcement, "will assemble all pertinent data concerning supplies and production of transportation equipment, including utilization of available equipment, that may be required to maintain or reestablish shipping services outside the United States, United Kingdom and Canada. It will also be the committee's job to recommend methods for the supply and production of such materials and equipment."

Southern Has "Grand Division" in Normandy

The "railway grand division" of the Army's Transportation Corps, which is supervising the erection of rolling stock in Normandy, is a unit sponsored by the Southern Railway, according to a release from the headquarters of the Army's European Theater. Commanding this unit is Lieut. Colonel W. W. Greiner, formerly trainmaster for the Southern at Birmingham, Ala., and a graduate of Virginia Military Institute.

Executive officer of the grand division is Lieut. Colonel E. L. Faulconer, formerly vice-president and general manager of the Atlantic & Yadkin. Major G. E. Saunders, a graduate of Washington University at St. Louis and a former employee of the Illinois Terminal, is the grand division's general storekeeper. Major B. P. Hughes, Jr., formerly the Southern's roundhouse foreman at Greensboro, N. C., is master mechanic. Major E. L. Weber, formerly the Southern's general foreman at Greenville, S. C., is superintendent of equipment.

Materials and Prices

The following is a digest of orders and notices that have been issued by the War Production Board and the Office of Price Administration since July 29, and which are of interest to railways:

Aluminum—Users of aluminum and aluminum alloy extruded shapes may accept deliveries of the smallest of the following amonts of particular types without violating inventory restrictions in CMPR-2: (1) A six months' supply of the particular extruded shape; (2) A quantity of the particular extruded shape sufficient to complete a contract; or (3) The following quantities of the particular extruded shape:

Wt. of individual extruded shape per linear foot	*Minimum pounds*
Up to ½ lb. inclusive per foot	100
Over ½ lb. to 1 lb. inclusive per foot	200
Over 1 lb. to 2 lbs. inclusive per foot	350
Over 2 lbs. to 4 lbs. inclusive per foot	500
Over 4 lbs. to 8 lbs. inclusive per foot	750
Over 8 lbs. per foot	1000

This rule in Inventory Direction 19 permits consumers to accept delivery of the same quantity of aluminum extrusions that they are permitted to order from producers under Direction 33 to CMPR-1.

Contruction Materials—A revised edition of the "Critical Construction Materials Design Guide" has been prepared to assist persons contemplating construction. It is an unofficial supplement to Schedule A, CMPR 6, and stresses the necessity of restricting construction designs to those utilizing materials that are most plentiful. Intended for consultation by all persons applying for permission to begin construction on Form WPB-617, this supplement is neither a directive nor an order of the W. P. B. Copies are available at all W. P. B. regional and district offices.

Copper Building Materials—Copper and copper alloy weatherstripping and 40 other items of building materials held by manufacturers, jobbers and retailers were released by an amendment to supplementary Order M-9-c-4 and may be used without restrictions. However, the delivery and installation of copper and copper base alloy, sheet, plate, roll, strip, rod, bar, extruded shapes and wire, as building materials, continue to be restricted by the order.

Copper conservation Order M-9-c continues to prohibit the manufacture of copper and copper base alloy controlled material forms and shapes for use in building construction, and also prohibits the use of these materials in the manufacture of many building material items. The amended order permits the use of copper or copper base alloy pipe or tubing in connecting new water heaters which replace heaters that are worn out or damaged beyond repair if copper or copper base alloy pipe or tubing was used in installing the heater being replaced, officials said.

Hack, Band and Circular Saws—Simplification and standardization specifications for hack saw blades and band saws are provided in two new schedules to Limitation Order L-216. The schedules supersede the restrictions on the manufacture of these products imposed by letters dated August 18, 1941, and issud by the Office of Production Management, which preceded W. P. B.

The manufacture of approximately 50 additional types of solid tooth circular saws is permitted and specification changes in permitted types of wide and narrow band saws are made by amendments to Schedules I, II and III of Order L-326 issued August 4.

Steel Scrap—The contamination of carbon steel scrap with alloys is becoming a more serious problem, industry representatives said at a recent meeting of the Steel division's Metallurgical and Operations Industry Advisory Committee. Some mills are encouraging the mixing of alloy and carbon steel scrap by accepting mixed shipments, a W. P. B. official said. Dealers and producers of scrap are not willing or able to maintain large scrap inventories, and the pressure to keep alloy steel scrap moving from industrial plants and dealers' yards has resulted in increasing the mixture of these grades. Some alloy steel scrap is moving at prices below carbon scrap, so that the incentive for maintaining proper segregation is lost in many instances, a government official said. Committee members recommended that the steel industry be urged to consume more alloy scrap under Direction 4 to M-21-a, and that Segregation Order M-24-c be kept in effect in the interest of the war effort. The inventory of alloy steel scrap in the hands of the steel industry consisted of more than 50 per cent triple alloy types, a recent W. P. B. survery revealed. However, the consumption of triple alloy scrap was not so large in relation to the percentage of triple alloy steels produced as was the consumed scrap of some other grades.

Prices

Commodities Sold by Government—Broad overall methods of price control for sales by the Government of all commodities, except food and except those commodities originally purchased by the Government for resale or stockpiling, have been announced by the O. P. A. These methods, which become effective September 1, or earlier at the option of any Government agency, also apply to sales by a contractor or subcontractor whose contract has been terminated by a Government agency where he has been authorized or directed by the Government agency to sell the commodities, and where the proceeds are paid or credited to the Government agency. Private sellers who buy these commodities for resale are not subject to the new provisions unless their resale maximum price is established by an O. P. A. order as permitted in the supplementary order that embodies the new methods.

Designed particularly to cover the disposal of vast quantities of material by the Government in the reconversion period, the new order seeks to keep prices within stabilization limits. At the same time the methods are made flexible enough to cover the multitude of sales, over widely scattered areas. More than a month is allowed before the new maximum pricing procedure must be used so that the Government agencies affected may acquaint their staffs in all parts of the country with details of the various methods that can be employed although optional use of the methods is permitted beforehand as a convenience. The methods of determining maximum prices are listed in one document in simple language and five appendices are included to facilitate the determination of exemptions from these ceiling prices or the determination of what O. P. A. regulations already provide ceiling prices on government sales, and are to be used where specified. Provision is made for sales at various price levels, thus maintaining adequate distributive margins by requiring that sales to distributors reflect their lawful buying, rather than selling, prices.

Fuel Oil—A change has been announced in the pricing method for residual fuel oil and blends of fuel oils with distillates, which establishes dollars-and-cents ceiling prices for No. 6 Commercial Standard specification fuel oil, irrespective of gravity. Amendment 13 to MPR-88, effective August 1, maintains, as the price for No. 6 fuel oil, the approximate average price that has been paid for heavy residual fuel oils since the gravity scale was put into effect on March 3, 1943. The new No. 6 ceiling is the former ceiling for 13-15.9 gravity fuel oil under the previous gravity system of pricing.

Dollars-and-cents prices are established for 23 refinery and tanker terminal areas, the price per 42-gallon barrel for No. 6 varying from 92 cents to $2.16. For example, in the state of Oklahoma, which is in Price Area B, and along the Gulf Coast, which is in Price Area D, the current ceiling for 13-15.9 gravity fuel oil is 97 cents per barrel. This becomes the new ceiling for No. 6 fuel oil in those areas. In Price Area M, which comprises all East Coast refineries and tanker terminals from Norfolk, Va., north, the current ceiling is $1.77, which becomes the No. 6 fuel oil ceiling in that area.

In establishing the new prices, O. P. A. returns to the pricing system for residual fuel oil that was in effect prior to the adoption, at the request of the industry and the Petroleum Administration for War, of the gravity scale of pricing.

GENERAL NEWS

Advises Caution on Social Security Bill

Clement fears pension fund in peril if one-sided law is hastily enacted

Stockholders and employees of the Pennsylvania have been circularized by President M. W. Clement, advising them to be wary of the "so-called Railroad Social Insurance Bill—H.R. 4805" (the provisions of which were reviewed in the *Railway Age* of July 8, 1944, page 90).

Solvency of Pension Funds—"While purporting greatly to enlarge the scope of the privileges in the present railroad pension plan," says Mr. Clement, the bill "would, in the end, undermine the whole structure of the railroad pension plan and might destroy it. Apart from the job itself, no one thing is more important to railroad employees than their pension fund, and no greater catastrophe could come to them in their old age than to find it unable to pay them their pensions.

"Ever since the turn of the century—for more than four decades—the employees of the Pennsylvania Railroad have had the pension privilege. At first it was an expense borne entirely by the Company. Later, by legislation jointly sponsored by the railroads and the railroad labor organizations, the expense became a jointly borne obligation on the part of the employees and the Company, each contributing equally to a national railroad retirement fund.

Present Fund Is Unsound—"A wise provision in the present railroad pension law is that this fund shall be reviewed periodically to determine its soundness. Both of the last two actuarial reviews have shown that this fund is not actuarially sound, and that either the privileges of retirement before pension age will have to be more restricted or the joint contribution will have to be increased. This is a situation that calls immediately for thorough consideration by responsible people and requires that definite corrective action be taken promptly.

"Instead, however, a legislative measure has been prepared, and sponsored by people who should know that the present railroad pension law is already actuarially unsound, proposing to add further privileges and conditions to the present law, giving it a new name—the Railroad Social Insurance Act—and holding forth to the employees of the railroads of the United States the prospects of additional benefits and advantages, with additional charges on their earnings. All this is proposed without ensuring the actuarial soundness of either the existing railroad pension plan or of the new privileges which are held out to the employees.

Railroads & Unions Should Collaborate—"Railroad labor leaders and railroad management jointly worked out the present railroad pension system, and the present law was jointly presented to the Congress, with the understanding that any modification would also be jointly undertaken. The fact is: railroad management has not been consulted and has had no part in drafting the new proposals; and it is not known to what extent, if any, the railroad employees themselves have been consulted by the proponents of this suggested legislation. We believe, however, that both the stockholders and the employees of the Pennsylvania Railroad should acquaint themselves with such a vital matter before it may be too late to do anything about it. Each of these groups, recognizing their responsibilities to themselves and to each other, should see that there are no amendments made to the Railroad Retirement Act which would further weaken that measure in any way, particularly now when it needs to be strengthened.

"The proposed Railroad Social Insurance Bill should be withdrawn, and railroad employees and railroad management should sit down together to review intelligently and determine wisely what is best to be done—first making sure that, above all else, the present railroad pension plan is put on a solid, solvent basis, and then carefully study any other proposals that merit consideration."

R. & L. H. S. Bulletin No. 64

Paul T. Warner has written another of his interesting locomotive histories which is pubilshed in Bulletin No. 64 of the Railway & Locomotive Historical Society, Inc., Boston, Mass.

This informative article outlines the history and development of the 4-6-0 type locomotive and includes many illustrations of well-known locomotives of this type. Another article is entitled "A Few Railroad Statistics or Who's the Biggest." It is composed of a number of tables containing railroad statistics, including the number of railroads in each of the seven classifications into which they are grouped by the Interstate Commerce Commission, the operated mileage and number of cars and locomotives owned by a number of the large railroads, and a list of private car companies owning 500 or more cars in the United States.

Other articles in this issue include additional notes on the Pittsburg, Shawmut & Northern; financing super-railroads (a paper delivered by John W. Barriger, III, before the Chicago Chapter of the Society); Pennsylvania Railroad class O engines; the Dismal Swamp Railroad; and a brief history of the Argentine Central Railway.

Train Telephone For Penn Main Line

300 locomotives and 90 cabin cars to operate over 245 miles of 4-track road

The first application to its main line operations of train-to-train and train-to-tower telephone communication was announced on August 7 by the Pennsylvania. The road's electronic train telephone system, providing instantaneous and continuous communication between moving trains and wayside towers and between moving trains themselves, will be installed on two main line four-track divisions, covering 245 miles of line, between Harrisburg and Pittsburgh, Pa.

This new installation of the electronic train telephone, which was developed in collaboration with the Union Switch & Signal Co. and has been in experimental use since June, 1942, on the Belvidere-Delaware Branch in northern New Jersey (described in the *Railway Age* of February 12, page 352), will give officers of the railroad opportunity to work out the adaptation of the new system to conditions in one of the heaviest railroad traffic areas of the country.

300 Locomotives to Be Equipped—The train telephone will be utilized in conjunction with the modern signaling and safety devices—automatic block signals and locomotive cab signals—and the installation, costing over $1,000,000 will, in effect, says the railroad's statement, "be a huge communications laboratory for further advancing the efficiency of railroad operation." Approximately 300 passenger and freight locomotives, 90 freight train cabin cars, and six strategically located wayside towers along the 245 mile stretch of main line track will be equipped with the train telephone.

Towermen in wayside towers can talk over the telephone with train crews moving in their areas, even though many miles distant, for the transmission of instructions, reports and information pertaining to train operations. On freight trains, the conductor in the cabin car and the engineman in the locomotive cab may talk to each other at will, and the crew of one train may communicate with the crew of another several miles distant. On passenger trains the telephone system will now be installed only on locomotives, the air whistle train signal continuing to care for intratrain communication in passenger service. Passenger engineman will be in constant reach of the towermen and of other trains, by means of the telephone.

(Continued on page 282)

Radial Truck Routes Can't Be Connected

Holders of such rights must not operate through hub points

Adopting the unusual course of issuing a report to explain its reasons for denying a petition, the Interstate Commerce Commission has affirmed its previous findings to the effect that a motor carrier certificate covering irregular-route radial service does not authorize the radial carrier to transport property between points in the radial area through the base or hub points. The prior determinations on the matter have been by Division 5, but the present report marks the first time the commission as a whole has spoken on the subject.

The report in MC-73673 comes after oral argument on the petition of G. & M. Motor Transfer Company, Inc., to which Division 5 had previously granted a certificate covering radial service from Elkin, N. C., and Statesville to points in Delaware, Georgia, Maryland, New Jersey, Ohio, Pennsylvania, South Carolina, Virginia, West Virginia, the District of Columbia, and specified sections of Tennessee and New York; and from this destination territory to points in North Carolina.

Common Carriers Opposed—G. & M.'s petition asked that the commission interpret certificates of radial carrier to authorize service between radial points through the base points. In other words, it took the position that G. & M. should be permitted, for example, to transport a shipment from New York to a point in Georgia, provided it was routed through one of the North Carolina hub points. This contention was opposed by the Regular Common Carrier Conference of American Trucking Associations, Inc., and rail carriers operating in Official Classification Territory.

In holding that the G. & M. position was "untenable," and that the desired interpretation "would be a variance with long-established precedent," the commission quoted with approval the pertinent previous decisions of Division 5 and pronouncements of the courts. Also denied is that phase of the petition which sought for G. & M. broader operating authority than it now has in the event the plea for the desired interpretation were rejected.

Chairman Patterson, concurring-in-part, expressed his disagreement with a majority statement to the effect that G. & M.'s present certificate would permit interchange arrangements with other carriers so long as its own service either begins or ends at one of the authorized base points. The chairman thinks that the limitations on the G. & M. certificate, which he approves, would preclude G. & M.'s participation with other carriers "in the transportation of any shipment which does not in fact originate at Elkins or Statesville or terminate at some point in North Carolina."

Alldredge Dissents—Commissioner Alldredge, dissenting, complained that the majority "has drawn a distinction in its interpretation of a certificate based solely upon the type of carrier involved"; and he does not think "such a distinction is sound as a matter of law." He also predicted that the decision "will produce so many inconsistent and illogical situations that unnecessary difficulty will be encountered in the administration of the act." Commissioner Porter subscribed to the Alldredge view, while Commissioner Rogers did not participate in the disposition of the proceedings.

M. P. Affiliate Gets Rights on Texas Routes

A certificate authorizing interstate trucking operations over 47 Texas routes on which it already had intrastate authority has been granted by the Interstate Commerce Commission to the Missouri Pacific Freight Transport Company, affiliate of the Missouri Pacific. The report by the commission's Division 5 is in No. MC-89723 (Sub-No. 4), and the authority granted is subject to the usual conditions designed to insure that the trucking operations remain auxiliary to rail services of the M. P. and its subsidiary lines.

I. C. C. Refuses to Reconsider Tank-Car Allowance Case

The Interstate Commerce Commission has refused to reconsider the No. 28515 proceeding wherein it found that provisions of a contract between the General American Tank Car Corporation and the El Dorado Oil Works were unlawful to the extent that they provided for crediting El Dorado's rental account for tank cars leased from General with mileage earnings in excess of the rental due.

The commission's action came in an order denying El Dorado's petition for rehearing, reargument, and reconsideration. Its report in the proceeding was noted in the *Railway Age* of April 29, page 823.

Hearings Ended in Alleghany Corporation Investigation

Without considering a finance docket application by Alleghany Corporation for an Interstate Commerce Commission order to formalize its control of the Chesapeake & Ohio, and thus of the Pere Marquette and Nickel Plate, the commission's public hearings in its investigation into the continuity of Alleghany's control ended last week, after Alleghany had signified its intention to file an amended application. The finance docket proceeding had been consolidated with the inquiry initiated by the commission, docketed as No. 29085. Developments in the hearings were noted in *Railway Age* of August 5, page 245.

It was indicated that a proposed report will be prepared in these proceedings, giving the parties an opportunity to set forth their views further before the commission's final decision is made public. Meanwhile, counsel have been allowed until October 15 to submit briefs setting forth the arguments upholding their respective positions. The basic issue involved is whether or not Alleghany had control, or the power to exercise control, of the C. & O. at the time the Transportation Act of 1940 became law, since acquisition of control thereafter, without I. C. C. approval, would be in violation of that legislation.

Justice Dept. Lawyer Flays the Railroads

Accuses carriers of many sins, with more being planned against public weal

Anti-trust actions against "monopolistic conditions" in transportation are in preparation by the Department of Justice, Wendell Berge, assistant United States attorney general in charge of the anti-trust division, stated in an address before the Kansas City Advertising and Sales Executive Club on August 7. He charged that the railroads are planning a complete transportation monopoly and are furthering a program to eliminate competition and hold back improvements in transportation.

"This plan which is advanced in the name of free enterprise," he declared, "contemplates the development of regional integrated transportation systems which would control and operate all rail, motor, water and air transport facilities throughout large geographic areas. To achieve this plan they advocate repeal of 'the charter of American freedom,' and the Sherman anti-trust act as it applies to transportation."

Railroads Accused of 5 Sins—A Justice Department survey, Mr. Berge said, has shown:

1. That there are discriminatory freight rates which have placed an unfair burden on the industry and agriculture of the South and West.

2. That these discriminatory rates have been fixed by private conspiracies and not by public authority.

3. That the development of motor and water carriers has been placed at a disadvantage.

4. That the introduction of new equipment and technical improvements has been delayed as a result of the monopolistic conditions of the transport industry.

5. That aviation transport has been retarded by railroad-imposed restrictions.

The Department of Justice, Mr. Berge asserted, will "do all that it can to remove the dead weight of the restraints which have been laid on certain areas of the country through the secret private agreements which we have uncovered."

He said that the fight for equality of freight rates has been a losing battle, and that "this battle experience has taught the people of these regions that it will avail them nothing to build factories, to develop power projects, to ask new industries and new capital unless the freight rate hardships, which act as a slow poison to industrial development, are removed."

"Excessive Capitalization" Charged—Sponsors of the regional transport system in one of their public pronouncements, Mr. Berge said, remarked that they, the railroad owners, are not concerned whether their returns come from water, rail, bus or air service. "This expression of the railroads' case leaves no question but that the purpose of this scheme to bring all forms of public transportation under the

domination of the railroads is designed to preserve the excessive capitalization of the railroads regardless of the economic effects upon the nation."

It requires no extended analysis "to understand the economic power of such integrated transportation systems," he said. "Such regional monopolies of all forms of transportation would possess the power of life and death over every community and every industry.

"Their rate policies would determine the location of industry, the sources from which raw materials would be drawn, the markets to which finished products would move, the possibilities of geographical transfer of population and industry and the employment opportunities for a large proportion of the workers in industry, trade, agriculture and mining.

"Freezing Progress"—"Indeed any such extension of private monopoly power would make public ownership and operation of their transportation facilities inevitable unless the people are to accept a freezing of progress and economic expansion. In short, such regional monopolies in the basic industry whose tentacles reach out into all industry and trade would have power exceeding that which the government itself can exercise."

Mr. Berge charged also that through their western agreement the railroads have delayed improvements in rail equipment, curtailed new transportation services and suppressed proposals to speed up freight and passenger schedules.

Johnston Comments—C. E. Johnston, chairman of the Western Association of Railway Executives, in commenting upon the charges asserted that the "railroads apparently are the target of a new phase of the smear campaign of the anti-trust prosecutors. The procedures which Mr. Berge claims are violations of the Sherman Anti-trust Act for the most part have been in effect for many years. They have been necessary for the efficient operation of the railroads, and essential to the development of industry and agriculture. Some of them are necessary in order to comply with the provisions of the Interstate Commerce act.

"All of Mr. Berge's charges have been aired before Congressional committees and the railroads already have spent much precious time and effort in refuting them. The railroad industry is the most rigidly regulated business in America. Virtually every important act of a railroad is subject to approval of the Interstate Commerce Commission. Yet the anti-trust division prosecutors would have the public believe the railroads are flagrant violators of the law. The harassment by the Justice department has been in sharp contrast to the co-operation the railways have received from the Executive, the War and the Navy departments, the Office of Defense Transportation and other government agencies, which have been of vital assistance to the railroads in moving the unprecedented war-time traffic."

Railroads to Be "Biddled"—A suit against Western railroads will be started within a few weeks Francis Biddle, United States attorney general, disclosed in an address before the Spokane, Wash., Bar Association on August 9. He said that an investigation of the Western railroads is being concluded and asked the support of western business men, asserting that the development of Pacific Coast states had been hampered by "discriminatory freight rates." The investigation of western lines, he said, has disclosed "that a commissioner who is not a representative of the government, but a sort of Will Hays of the railroad industry, says what the railroads may and may not do and they bow to his order." (The commissioner referred to by Mr. Biddle is probably C. E. Johnston, chairman of the Western Association of Railway Executives.)

July Employment 3.72 Per Cent Above July, 1943

Railroad employment decreased 0.29 per cent—from 1,446,860 to 1,442,623—during the one-month period from mid-June to mid-July, but the July total was 3.72 per cent above the comparable 1943 figure, according to the latest summary of preliminary reports prepared by the Interstate Commerce Commission's Bureau of Transport Economics and Statistics. The index number, based on the 1925-1929 average and adjusted for seasonal variation, was 138.4 for July as compared with June's 139.9 and July, 1943's 133.5.

Employment in July was greater than in June in four groups, but these increases of less than one per cent were more than offset by declines of 1.25 per cent in the maintenance of way and structures group, 0.37 per cent in maintenance of equipment and stores, and 0.36 per cent in train and engine service. Meanwhile all groups were above July, 1943, the range being from 6.14 per cent for the maintenance of way and structures group to 0.75 per cent for train and engine service.

Signals Must Protect Against Fouling at Crossovers

The Interstate Commerce Commission has advised all railroads that it has observed, in connection with investigations of other matters, that there are instances on a number of roads where a locomotive or car may so occupy a hand-operated crossover between main tracks while switches are in normal position that it physically fouls one main track but does not shunt the fouling circuit for that track. Such an arrangement, it pointed out, does not conform to the "intent and purpose" of section 51(b) of the commission's prescribed standards governing signal systems, "as clearly set forth therein."

In view of the fact that a number of carriers seem to have been under a misapprehension as to the meaning of the section, the commission remarked, it has seemed desirable to call general attention to the matter. The commission is not disposed to initiate prosecutions for violations at this time, "provided the carriers are diligent in correcting such violations as promptly as possible." In the meantime, however, "offending carriers must be prepared to assume the burden of justifying their failure to comply with section 51(b)."

In reply to letters calling attention to situations of this kind, several roads have stated that they did not understand the requirements of section 51(b) to be as interpreted by the commission, and that they had not been able to develop a satisfactory method of meeting such requirements, but that investigations were being made both by individual roads and by the Association of American Railroads. They asked that the enforcement of this section of the commission's rules concerning signal installations be held in abeyance pending the completion of these investigations.

June Accident Statistics

The Interstate Commerce Commission on August 7 made public its Bureau of Transport Economics and Statistics' preliminary summary of steam railway accidents for June and this year's first six months. The compilation, which is subject to revision, follows:

Item	Month of June		6 months ended with June	
	1944	1943	1944	1943
Number of train accidents*	1,292	1,281	8,219	8,209
Number of casualties in train, train-service and nontrain accidents:				
Trespassers:				
Killed	164	192	716	828
Injured	104	142	543	704
Passengers on trains:				
(a) In train accidents*				
Killed	2	..	9	16
Injured	94	28	604	1,164
(b) In train-service accidents				
Killed	10	4	33	25
Injured	242	234	1,369	1,265
Travelers not on trains:				
Killed	..	1	8	8
Injured	84	104	527	567
Employees on duty:				
Killed	70	92	520	491
Injured	3,774	3,794	22,584	21,835
All other nontrespassers:**				
Killed	124	123	991	981
Injured	422	433	3,343	3,322
Total—All classes of persons:				
Killed	370	412	2,277	2,349
Injured	4,720	4,735	28,970	28,857

* Train accidents (mostly collisions and derailments) are distinguished from train-service accidents by the fact that the former cause damage of more than $150 to railway property.

** Casualties to "Other nontrespassers" happen chiefly at highway grade crossings. Total highway grade-crossings casualties *for all classes of persons, including both trespassers and nontrespassers,* were as follows:

Persons:				
Killed	107	102	889	849
Injured	212	211	1,946	1,963

Defendants Seek Bill of Particulars in Keith Suit

A request that the Keith Railway Equipment Company make its complaint more definite has been filed with the Federal District Court at Chicago by the Association of American Railroads and other defendants. The suit was filed by the Keith Railway Equipment Company on June 7 against the A. A. R., 17 Class I railroads, the General American Transportation Corporation, and Lester W. Selig, its president, charging the defendants with violations of the Sherman anti-trust act and seeking to collect $300,000 damages. The answer filed by the railroads stated that the complaint did not say how the Keith company was damaged by the alleged coercions; did not prove that any connection existed between them, on the one hand and General American or Mr. Selig on the other; and that the complaint

did not identify any tank cars that contributed to the damage.

The answer of General American and Mr. Selig contended that the allegations were merely conclusions of the plaintiff. They asked the court to dismiss the suit or to require the plaintiff to file an amended complaint showing the names of the conspirators, the nature of the unlawful agreement among them, each overt act thereunder, precise damages sustained under each such act, and a statement of the demands for damages in separate counts.

States Relax Truck Weight Regulations

The state of Indiana has complied with requests of the Office of Defense Transportation to permit overweight truck hauls of industrial alcohol from storage points to the synthetic rubber plant at Louisville, Ky., during the August "alcohol holiday." Kentucky distilleries that have been supplying the plant are now engaged in beverage production, which makes it necessary for the plant to move its supplies from storage at Lawrenceville, Ill., Zionsville, Ind., and Indianapolis.

The Indiana Highway Commission has agreed to issue special 30-day permits for the overweight hauls. And its chairman—S. C. Hadden—has received from O. D. T. Director J. Monroe Johnson a letter saying that the action "has been of great assistance to us in solving a difficult transportation problem."

A couple of days later Colonel Johnson commended the states of Texas and Oklahoma for liberalizing their laws controlling tank trucks transporting gasoline to Army airfields and petroleum products for essential civilian uses. The states modified their restrictions temporarily with the specification that O.D.T., the Army Air Forces and other military authorities designate routes over which tank trucks will operate. Vehicle operators are required to obtain special permits from state highway authorities and carry the permits while in operation.

Heavy Casualties to Track Laborers in A. C. L. Wreck

Westbound Atlantic Coast Line passenger train No. 57, enroute from Waycross, Ga., to Montgomery, Ala.—consisting of a steam locomotive and 14 cars—had its six rear cars derailed at Stockton, Ga., a station 42 miles west of Waycross, at 11:45 p. m. on August 4 when a rail broke under the train. The ninth car behind engine, which was the sleeping car operating nightly from Savannah, Ga., to Montgomery, Ala., was the first car to be derailed, and was followed in leaving the tracks by a coach occupied by a number of colored track laborers (employees of the company), three unoccupied coaches which were deadheading to Bainbridge, Ga., for troop service, and a hospital car occupied by army personnel.

None of the passengers in the sleeping car was injured. The coach occupied by the track laborers was thrown against the engine of an eastbound freight train waiting on the siding at Stockton for No. 27 to pass, and the coach was practically demolished, fatally injuring 47 and otherwise injuring 32 of the occupants of that car. The hospital car on the rear of train was derailed but remained upright; four of the army personnel in that car were slightly injured and were taken in ambulances to Finney General Hospital at Thomasville, Ga. None of the passengers in the cars ahead of the derailed sleeper was injured and all continued on to their destinations. The injured track laborers in the demolished coach were taken to hospitals at Valdosta, Ga., and Waycross, in ambulances and on a relief train which was sent out from Waycross. No member of the train crew of No. 57 was injured. Traffic over the Waycross-Montgomery line was being temporarily rerouted via Albany, Ga.

The rail which broke under the train was of 100-lb. section, manufactured in 1927 and laid in the track in that year. This part of the line was inspected by the Sperry Rail Detector Car August 6, 1943, at which inspection no defects were discovered in that particular rail. The car in which casualties to track laborers occurred was of all-steel construction. It was not the property of the A. C. L. but had been loaned to the A. C. L. by the railroad owning it.

I. C. C. Service Orders

The restrictions upon icing refrigerator cars loaded in the South made effective by Interstate Commerce Commission Service Order No. 210 have been modified by General Permit No. 1 thereunder, effective August 1, which authorizes carriers to provide standard refrigeration on shipments of peaches originating in Kentucky, Tennessee, Alabama, Georgia, South Carolina, North Carolina, West Virginia, and Virginia, and to fill bunkers to capacity when icing such shipments.

The provisions of Service Order No. 104, which concerns loading westbound refrigerator cars to reduce empty car movements, have been modified by Amendment No. 6, effective August 1, removing points on the Great Northern, Northern Pacific and Chicago, Milwaukee, St. Paul & Pacific in Idaho from the destination territory to which such provisions applied. Points on the Union Pacific in southern Idaho remain within the area to which the order is applicable.

By Service Order No. 223, effective August 7, roads handling carload shipments of sand, gravel and aggregates moving from South Bend, Neb., to Woodlawn, for use on government construction at the Army air base there, are prohibited from weighing such shipments on track scales, except those necessary to determine average weights.

McCarthy Succeeded by Connors As O. D. T. Rail Head

The Office of Defense Transportation has announced the resignation of Henry F. McCarthy as assistant director of the O. D. T. in charge of the Division of Railway Transport, effective September 1. He will be succeeded by Edward J. Connors, who has been on leave from his position as vice-president in charge of operation of the Union Pacific since May of this year in order to act as director of the O. D. T. Division of Transport Personnel.

Mr. McCarthy also was on leave from his prewar post as passenger traffic manager of the Boston & Maine and Maine Central, and is returning to this work. Under Director Eastman, he was in charge of the O. D. T. Division of Traffic Movement, being made assistant director in charge of all railroad operations by Col. Johnson earlier this year, as noted in *Railway Age* of April 22, page 788.

In a letter to Col. Johnson, Mr. McCarthy said:

"The railroads have a war job which is as yet unfinished . . . a return to my former activity is indicated. My company and I have reviewed this subject several times with Mr. Eastman and with you in the months past. The concern I had about departure was based on fear that my action would be construed as a sign that one of the Office of Defense Transportation's original men thought that there was an end to transport difficulties. The continuing military problems in Europe and the intensified activity in the Pacific will not permit any easing in the transportation situation. The caliber of my successor should deny any false interpretation."

Col. Johnson in his reply wrote as follows: "It is with great reluctance that I accept your resignation. I put so high a value on your ability and services that I placed you in charge of all railroad matters and the wisdom of that decision was more than proved, for you have been able, with less than half the personnel, to maintain the same steady control as before."

An account of Mr. Connors' career, with his photograph, appeared in the May 13 issue of *Railway Age*, page 905, at the time he joined the O. D. T. staff.

Personnel Needs Drop to 98,000

Personnel needs of the railroad totaled 98,000 on July 1, compared with 102,000 on June 1 and 83,000 on July 1, 1943, according to the Railroad Retirement Board. This figure for the entire industry is based on a tabulation of reports from 176 employers which reported shortages of 91,000 workers.

Larger proportional decreases occurred in needs for additional helpers and apprentices and office workers while needs for skilled trades journeymen remained at approximately the same level as a month earlier. In contrast with the other groups, the number of vacancies in train and engine service jobs increased 8 per cent, reflecting principally openings for brakemen and switchmen.

July 1 Personnel Needs of Employers Reporting for Both June and July

Occupational group	Needs reported: Number	Per cent of total	Per cent of June
1. Executives, professional men, telegraphers and clerks	3,667	4.0	91.2
2. Trainmen and enginemen	6,731	7.4	108.4
3. Skilled trades journeymen	14,258	15.7	99.9
4. Skilled trades helpers and apprentices	12,364	13.6	93.4
5. Laborers	51,891	57.1	94.7
6. Attendants, cooks, porters, and waiters	1,281	1.4	85.4
7. Miscellaneous	748	0.8	90.1
Total	90,940	100.0	95.8

Personnel needs of employers reporting in both months were smaller in four of the geographical areas. The largest decrease,

numerically and relatively, occurred in the northwest where a decline of 18 per cent resulted from fewer unfilled jobs for laborers, skilled shopmen and helpers and apprentices. Decrease of 10, 6, and 2.5 per cent in needs occurred in the northeast, the southwest and the area around the Great Lakes respectively. In all three areas fewer additional helpers and apprentices were needed, but the chief decrease was in needs for laborers.

In the southeast an increase of 8 per cent in shortages stemmed mainly from increased needs for additional laborers and skilled shopmen. In the far west the rise in reported needs was 6 per cent.

Milwaukee Gets First Fairbanks-Morse Diesel Switcher

A 120-ton, 1,000-hp. switching locomotive, powered with new F-M opposed-piston Diesel engine and Westinghouse electrical equipment, was exhibited to about 5,000 midwestern railway and industrial leaders and plant employees on August 8 at the Beloit, Wis., plant of Fairbanks, Morse & Co.

The locomotive, which was built for and delivered to Chicago, Milwaukee, St. Paul & Pacific, is the first of a series of locomotives which Fairbanks-Morse, as heretofore announced in *Railway Age*, proposes to construct for all classes of railway service in the postwar period and, in fact, starting as soon as the production capacity of the new Beloit plant is not fully required to meet submarine diesel engine needs.

In elaborate and carefully-planned preliminary ceremonies, over which A. C. Howard, general manager of the Beloit Works presided, R. H. Morse, Jr., general sales manager of Fairbanks-Morse, substituted for Col. Robert H. Morse, president, and formally presented the new power unit to the railroad. It was formally accepted by J. T. Gillick, chief operating officer of the Milwaukee, and christened by Mrs. Gillick. Congratulatory messages were delivered in person by Governor W. S. Goodland of Wisconsin and Lieutenant-Governor Hugh Wm. Cross of Illinois, both of whom commended Fairbanks-Morse for its foresight and business judgment, as exemplified by over 100 years of service to American industry since the company was first organized.

Freight Car Loading

Loadings of revenue freight for the week ended August 5 totaled 890,458 cars, the Association of American Railroads announced on August 10. This was a decrease of 20,075 cars, or 2.2 per cent, under the preceding week, but an increase of 18,325 cars, or 2.1 per cent, over the corresponding week last year, and an increase of 40,237 cars, or 4.7 per cent, above the comparable 1942 week.

Loading of revenue freight for the week ended July 29 totaled 910,533 cars and the summary for that week as compiled by the Car Service Division, A. A. R., follows:

Revenue Freight Car Loading

For the Week Ended Saturday, July 29			
District	1944	1943	1942
Eastern	166,660	169,806	156,760
Allegheny	200,272	197,436	187,966
Pocahontas	56,859	56,916	57,086
Southern	124,154	119,325	121,272
Northwestern ..	141,705	141,843	141,096
Central Western	144,018	131,821	126,409
Southwestern ..	76,865	68,378	72,987
Total Western Districts	362,588	342,042	340,492
Total All Roads	910,533	885,525	863,576
Commodities			
Grain and Grain products	57,409	58,553	43,618
Live Stock	14,878	14,270	11,790
Coal	180,901	178,134	165,705
Coke	14,829	14,937	13,819
Forest Products	53,120	48,182	55,463
Ore	85,173	86,704	88,429
Merchandise l.c.l.	103,715	98,706	89,564
Miscellaneous ..	400,508	386,039	395,188
July 29	910,533	855,525	863,576
July 22	903,034	883,838	855,515
July 15	904,804	877,335	857,146
July 8	745,141	808,630	855,158
July 1	897,800	852,082	753,740
Cumulative Total, 31 Weeks ...	25,412,706	24,407,878	25,248,536

In Canada.—Car loadings in Canada for the week ended July 29 totaled 71,114, as compared to 72,552 in the previous week and 68,826 in the comparable 1943 week, according to the summary of the Dominion Bureau of Statistics.

Total for Canada	Total Revenue Cars Loaded	Received from Connections
July 29, 1944	71,114	27,655
July 22, 1944	72,552	38,469
July 15, 1944	70,691	35,826
July 31, 1943	68,826	41,988
Cumulative Totals for Canada:		
July 29, 1944	2,076,822	1,160,795
July 31, 1943	1,919,228	1,190,102
Aug. 1, 1942	1,914,891	994,347

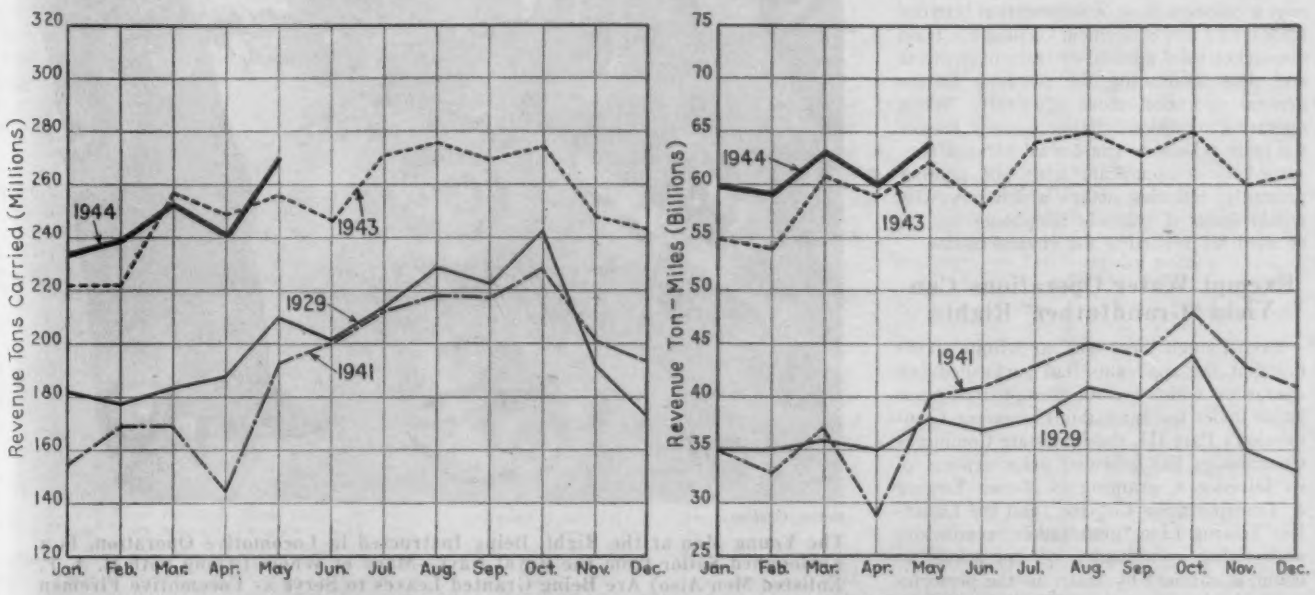
Nickel-Plate Locomotives—A Correction

In an article descriptive of the 2-8-4 type locomotive built by the American Locomotive Company for the Chesapeake & Ohio on page 200 of the July 29 issue of the *Railway Age* mention is made of the use of plain bearings on a total of 55 2-8-4 type locomotives built by the American Locomotive Company for the New York, Chicago & St. Louis. All driving axles and engine trucks of the last 15 2-8-4 type locomotives built by Lima for the Nickel Plate are equipped with Timken roller bearings. Fifteen additional locomotives of the same type now being built by Lima for the same road will be similarly equipped, making a total of 30 roller-bearing equipped locomotives for the Nickel Plate.

Will Try Wooden Barges for Carrying Crude Oil

Wooden barges "designed and built for the movement of residual oil" and "never intended to be employed to carry crude oil" are nevertheless about to be tried out for the movement of the latter commodity, according to an August 5 announcement from the Office of Defense Transportation. The trial, "with a view of further relieving the tank car shortage," will be made with 12 barges operating on the Mississippi river against the current.

The announcement of the test was embodied in an account of a general report on the performance of the wooden barges which was made recently to O. D. T. Director J. Monroe Johnson by Ernst Holzborn,



Revenue Tons and Revenue Ton-Miles—1944 Compared with 1929, 1941 and 1943

head of O. D. T.'s Waterways Transport Department. Under the program, sponsored some time ago by O. D. T., the construction of 269 wooden barges was financed by the Defense Plant Corporation. Mr. Holzborn reported that these barges, although not as efficient as steel tank barges, "have proved by actual performance to be satisfactory for transporting certain vital wartime petroleum products."

More than two-thirds of the 269 vessels are now in use, Mr. Holzborn went on, 64 of them being employed in the transportation of residual oil on the Gulf Intracoastal Waterway from Texas fields to Florida refineries. Twenty more are being fitted for that service, while others have been chartered to private carriers or turned over to the armed services.

Train Telephone for Penn Main Line

(*Continued from page 277*)

Experienced Manufacturers — The most recent refinements in the electronic train telephone, the announcement explained, have been brought about through the pooling of the facilities, laboratory research and engineering resources of the Union Switch & Signal Co. and the General Electric Company. Both of these industries have been working in the field of train communications for almost a quarter of a century. The train telephone utilizes high-frequency alternating electric currents, transmitted by induction to the rails and to existing wires on poles parallel to the tracks. The transmission paths are, therefore, confined entirely to railroad property.

As a result of the collaboration between the two signal and electrical companies, the train telephone system is now enabled to employ frequency modulation and higher carrier currents for transmission, thereby materially increasing its efficiency and removing any handicap to its use in high static locations, such as electrified trackage or dense industrial areas.

No change is made in the operating rules governing the movements of trains when the train telephone is used. The system permits a constant flow of information between train crews and towermen, keeping the train dispatcher fully advised of train movements and thus facilitating the planning of the general operation more efficiently. When operating conditions change for any reason, the train telephone enables all persons concerned to communicate with one another promptly, reducing delays which otherwise would occur if wayside telephones had to be used for reporting the circumstances.

Exempt Water Operations Can Yield "Grandfather" Rights

Even though there was no definite showing that the applicants had performed any operations which are not exempt from regulation under the Interstate Commerce Commission's Part III, the Interstate Commerce Commission has affirmed prior reports of its Division 4, granting to Moran Towing & Transportation Co., Inc., and the Dauntless Towing Line "grandfather" certificates authorizing continuance of operations as common carriers by water in the performance of general towage. The commission's report comes after rehearing and reconsideration of the proceedings, the title case being W-12, which involves the Moran applications.

Division 4 is reversed, however, with respect to the geographical scope of the operations authorized. The commission trims the territory of both applicants to preclude the performance of towage between points on the Great Lakes and between points on the Gulf of Mexico.

"Biggest in the World"—Thus Moran, whose business "is probably the largest of its kind in the world," now gets authority to continue general towage services between points on the Atlantic Coast and inland tributary waterways including the New York State canal system; between points on the Gulf of Mexico, on the one hand, and, on the other, points on the Atlantic Coast and inland tributary waterways including the New York State canal system and the Great Lakes; and between points on the Great Lakes, on the one hand, and, on the other, points on the Atlantic Coast and inland tributary waterways including the New York state canal system. Dauntless gets rights covering operations between points on the Atlantic Coast and inland tributary waterways including the New York state canal system, and between points on such waterways, on the one hand, and points on the Great Lakes, on the other.

The commission's determination that the applicants were entitled to certificates even though few, if any, of their operations were of the non-exempt variety was made in the Moran case and followed in the Dauntless proceeding. It relied on Division 4's interpretation of the act as set forth in *Russell Bros. Towing Co., Inc., Common Carrier Application,* 250 I. C. C. 429. There the "great bulk" of the applicant's transportation was exempt from regulation, but the division, among other comment, said: "It seems clear that if we shut our eyes to all of applicant's transportation except that which is subject to regulation, we get an incomplete and distorted picture of the nature and extent of its operations. To place limitations upon 'grandfather' rights predicated upon that view would be unjust and unreasonable, and is not contemplated by law."

To Continue "Unlimited" Service—Previously the commission had quoted from Division 4's prior report on the Moran applications, which had noted that the appli-

* * * *

How Britain Deals With Railways' Labor Shortage

British Combine

The Young Man at the Right, Being Instructed in Locomotive Operation, Is a Furloughed Sailor from the Royal Navy—Many of Whom (Along with R. A. F. Enlisted Men Also) Are Being Granted Leaves to Serve as Locomotive Firemen and Cleaners

cant had always held itself out to perform general towage, making no attempt to confine its services to operations which have been exempted. "If we were to deny the application," the division went on, "applicant would no longer be able to hold out an unlimited general towage service to the public, but would be required to confine its services to exempted operations. Such limitation would require that applicant circumspectly examine every tender of business in order to determine whether or not the transportation would be exempted, and would deprive the public of the unlimited services which have been available."

Speaking for itself, the full commission thought it "unnecessary in this case to determine whether the services performed were or were not actually subject to the act." It pointed out that Moran towed for all comers, and under the act "we are required to issue an applicant a certificate. . . . to continue the bona fide operations it was performing on January 1, 1940, and continuously since."

Chairman Patterson dissented because he thought the majority report afforded no sufficient basis for concluding that the operations authorized are or are not the same as those which applicants were performing on January 1, 1940, and continuously since.

Other Dissents—Commissioner Miller, dissenting-in-part, recalled his dissent to Division 4's prior reports, adding that nothing has been shown in the further proceedings to cause him to alter his views. "I cannot perceive," he said, "why common and contract carriers should be held in their 'grandfather' applications to the precise pattern of their antecedent operations, while towers, such as applicants, should be given the broadest possible rights because they feel they might experience difficulty without it or because they feel they might have occasion to use it. The 'grandfather' test should be the same for both." Commissioner Splawn, also dissenting-in-part, objected to the grant of the certificate to Moran; he found "no substantial evidence that this applicant has performed any service which is not exempt."

Meetings and Conventions

The following list gives names of secretaries, dates of next or regular meetings and places of meetings:

ALLIED RAILWAY SUPPLY ASSOCIATION.—J. F. Gettrust, P. O. Box 5522, Chicago 80, Ill.

AMERICAN ASSOCIATION OF GENERAL BAGGAGE AGENTS.—E. P. Soebbing, 1450 Railway Exchange Bldg., St. Louis, Mo.

AMERICAN ASSOCIATION OF PASSENGER TRAFFIC OFFICERS.—B. D. Branch, C. R. R. of N. J., 143 Liberty St., New York 6, N. Y.

AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—Miss Elinor Heffern, Room 839, 310 S. Michigan Ave., Chicago 4, Ill. Annual meeting May 8-10, 1945, Hotel Stevens, Chicago, Ill.

AMERICAN ASSOCIATION OF RAILWAY ADVERTISING AGENTS.—E. A. Abbott, Poole Bros. Inc., 85 W. Harrison St., Chicago, Ill.

AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—Miss Elinor Heffern, Room 839, 310 S. Michigan Ave., Chicago 4, Ill. Annual meeting, October 17-19, 1944, Hotel Stevens, Chicago, Ill.

AMERICAN RAILWAY CAR INSTITUTE.—W. C. Tabbert, 19 Rector St., New York 6, N. Y.

AMERICAN RAILWAY DEVELOPMENT ASSOCIATION.—J. B. Lanctot, Canadian National Rys., E. 811 First National Bank Bldg., St. Paul, Minn. Next meeting, December 14-15, 1944, Palmer House Club Bldg., Chicago, Ill.

AMERICAN RAILWAY ENGINEERING ASSOCIATION.—Works in cooperation with the Association of American Railroads, Engineering Division.—W. S. Lacher, 59 E. Van Buren St., Chicago 5, Ill. Annual meeting, March 13-15, 1945, Palmer House, Chicago, Ill.

AMERICAN RAILWAY MAGAZINE EDITORS' ASSOCIATION.—Page N. Price, Norfolk & Western Magazine, Roanoke, Va.

AMERICAN SHORT LINE RAILROAD ASSOCIATION.—W. R. Stough, Jr. (Ass't Secy.-Treas.), Tower Bldg., Washington 5, D. C.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—C. E. Davies, 29 W. 39th St., New York 18, N. Y.

Railroad Division.—E. L. Woodward, Railway Mechanical Engineer, 105 W. Adams St., Chicago 3, Ill.

AMERICAN TRANSIT ASSOCIATION.—Guy C. Hecker, 292 Madison Ave., New York 17, N. Y.

AMERICAN WOOD-PRESERVERS' ASSOCIATION.—H. L. Dawson, 1427 Eye St., N. W., Washington 5, D. C.

ASSOCIATED TRAFFIC CLUBS OF AMERICA, INC.—R. A. Ellison, Cincinnati Chamber of Commerce, 1203 C. of C. Bldg., Cincinnati 2, O.

ASSOCIATION OF AMERICAN RAILROAD DINING CAR OFFICERS.—F. R. Borger, C. I. & L. Ry., 836 S. Federal St., Chicago 5, Ill.

ASSOCATION OF AMERICAN RAILROADS.—H. J. Forster, Transportation Bldg., Washington 6, D. C.

Operations and Maintenance Department.—Charles H. Buford, Vice-President, Transportation Bldg., Washington 6, D.C.

Operating-Transportation Division — L. R. Knott, 59 E. Van Buren St., Chicago 5, Ill.

Operating Section.—J. C. Caviston, 30 Vesey St., New York 7, N. Y.

Transportation Section.—H. A. Eaton, 59 E. Van Buren St., Chicago 5, Ill.

Fire Protection and Insurance Section.—W. F. Steffens, New York Central, Room 3317, 230 Park Avenue, New York 17, N. Y.

Freight Station Section.—N. Kaplan, 59 E. Van Buren St., Chicago 5, Ill.

Medical and Surgical Section.—J. C. Caviston, 30 Vesey St., New York 7, N. Y.

Protective Section.—J. C. Caviston, 30 Vesey St., New York 7, N. Y.

Safety Section.—J. C. Caviston, 30 Vesey St., New York 7, N. Y.

Telegraph and Telephone Section.—W. A. Fairbanks, 30 Vesey St., New York 7, N. Y.

Engineering Division.—W. S. Lacher, 59 E. Van Buren St., Chicago 5, Ill. Annual meeting, March 13-15, 1945, Palmer House, Chicago, Ill.

Construction and Maintenance Section.—W. S. Lacher, 59 E. Van Buren St., Chicago 5, Ill. Annual meeting, March 13-15, 1945, Palmer House, Chicago, Ill.

Electrical Section.—W. S. Lacher, 59 E. Van Buren St., Chicago 5, Ill. Annual meeting, October 11, 1944, Hotel Sherman, Chicago, Ill.

Signal Section.—R. H. C. Balliet, 30 Vesey St., New York 7, N. Y. Annual meeting, October 4-5, 1944, Hotel Stevens, Chicago, Ill.

Mechanical Division.—Arthur C. Browning, 59 E. Van Buren St., Chicago 5, Ill.

Electrical Section.—J. A. Andreucetti, 59 E. Van Buren St., Chicago 5, Ill. Annual meeting, October 12-13, 1944, Hotel Sherman, Chicago, Ill.

Purchases and Stores Division.—W. J. Farrell (Executive Vice-Chairman), Transportation Bldg., Washington 6, D. C.

Freight Claim Division.—Lewis Pilcher, 59 E. Van Buren St., Chicago 5, Ill.

Motor Transport Division.—George M. Campbell, Transportation Bldg., Washington 6, D. C.

Car Service Division.—E. W. Coughlin, (Assistant to Chairman), Transportation Bldg., Washington 6, D. C.

Finance, Accounting, Taxation and Valuation Department.—E. H. Bunnell, Vice-President, Transportation Bldg., Washington 6, D. C.

Accounting Division.—E. R. Ford, Transportation Bldg., Washington 6, D. C.

Treasury Division.—E. R. Ford, Transportation Bldg., Washington 6, D. C.

Traffic Department.—A. F. Cleveland, Vice-President, Transportation Bldg., Washington 6, D. C.

ASSOCIATION OF RAILWAY CLAIM AGENTS.—F. L. Johnson, Alton R. R., 340 W. Harrison St., Chicago, Ill.

BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.—P. R. Austin, Johns-Manville Sales Corp., Merchandise Mart, Chicago, Ill.

CANADIAN RAILWAY CLUB.—C. R. Crook, 4415 Marcil Ave., N. D. G., Montreal, Que. Regular meeting, second Monday of each month, except June, July and August, Windsor Hotel, Montreal, Que.

CAR DEPARTMENT ASSOCIATION OF ST. LOUIS, MO.—J. J. Sheehan, 1101 Missouri Pacific Bldg., St. Louis, Mo. Regular meetings, third Tuesday of each month, except June, July and August, Hotel De Soto, St. Louis, Mo.

CAR DEPARTMENT OFFICERS' ASSOCIATION.—F. H. Stremmel, 6536 Oxford Ave., Chicago 31, Ill.

CAR FOREMEN'S ASSOCIATION OF CHICAGO.—Ralph J. Feddor, 2803 N. Campbell Ave., Chicago, Ill. Regular meetings, second Monday of each month, except June, July and August, La Salle Hotel, Chicago, Ill.

CENTRAL RAILWAY CLUB OF BUFFALO.—R. E. Mann, 1840-42 Hotel Statler, McKinley Square, Buffalo, N. Y. Regular meetings, second Thursday of each month, except, June, July and August, Hotel Statler, Buffalo, N. Y.

EASTERN ASSOCIATION OF CAR SERVICE OFFICERS.—H. J. Hawthorne, Union Railroad, East Pittsburgh, Pa.

EASTERN CAR FOREMAN'S ASSOCIATION.—W. P. Dizard, 30 Church St., New York 7, N. Y. Regular meetings, second Friday of January, February (Annual Dinner), March, April, May, October and November, 29 W. 39th St., New York, N. Y.

LOCOMOTIVE MAINTENANCE OFFICERS' ASSOCIATION.—C. M. Lipscomb, 1721 Parker Street, Noth Little Rock, Ark.

MASTER BOILER MAKERS' ASSOCIATION.—A. F. Stiglmeier, 29 Parkwood St., Albany 3, N. Y.

NATIONAL ASSOCIATION OF RAILROAD AND UTILITIES COMMISSIONERS.—Ben Smart, 7413 New Post Office Bldg., Washington, D. C.

NATIONAL ASSOCIATION OF SHIPPERS' ADVISORY BOARDS.—C. J. Goodyear, 725 Reading Terminal, Philadelphia 5, Pa.

NATIONAL INDUSTRIAL TRAFFIC LEAGUE.—Edward F. Lacey, Suite 450, Munsey Bldg., Washington 4, D. C. Annual meeting, November, 1944, Hotel Pennsylvania, New York, N. Y.

NATIONAL RAILWAY APPLIANCES ASSOCIATION.—C. H. White, Room 1826, 208 S. La Salle St., Chicago 4, Ill.

NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meetings, second Tuesday of each month, except June, July, August and September, Hotel Vendome, Boston, Mass.

NEW YORK RAILROAD CLUB.—D. W. Pye, 30 Church St., New York 7, N. Y. Regular meetings, third Thursday of each month, except June, July, August, September and December, 29 W. 39th St., New York, N. Y.

NORTHWEST CARMEN'S ASSOCIATION. — E. N. Myers, Minnesota Transfer Ry., 1434 Iowa Ave., St. Paul, Minn. Regular meetings, first Monday of each month, except June, July and August, Midway Club, 1931 University Ave., St. Paul, Minn.

PACIFIC RAILWAY CLUB.—William S. Wollner, P. O. Box A, Sausalito, Cal. Regular meetings, second Thursday of each alternate month, at Palace Hotel, San Francisco, Cal., and Hotel Biltmore, Los Angeles, Cal.

RAILWAY BUSINESS ASSOCIATION.—P. H. Middleton, First National Bank Bldg., Chicago 3, Ill.

RAILWAY CLUB OF PITTSBURGH.—J. D. Conway, 308 Keenan Bldg., Pittsburgh, Pa. Regular meetings, fourth Thursday of each month, except June, July and August, Fort Pitt Hotel, Pittsburgh, Pa.

RAILWAY ELECTRIC SUPPLY MANUFACTURERS' ASSOCIATION.—J. McC. Price, Allen-Bradley Company, 624 W. Adams St., Chicago 6, Ill.

RAILWAY FUEL AND TRAVELING ENGINEERS' ASSOCIATION.—T. Duff Smith, Room 811, Utilities Bldg., 327 S. La Salle St., Chicago, Ill.

RAILWAY SUPPLY MANUFACTURERS' ASSOCIATION.—J. D. Conway, 308 Keenan Bldg., Pittsburgh, Pa.

RAILWAY TELEGRAPH AND TELEPHONE APPLIANCE ASSOCIATION.—G. A. Nelson, Waterbury Battery Company, 30 Church St., New York 7, N. Y. Meets with Telegraph and Telephone Section of A. A. R.

RAILWAY TIE ASSOCIATION.—Roy M. Edmonds, 610 Shell Bldg., St. Louis 3, Mo.

ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—Miss Elinor Heffern, Room 839, 310 S. Michigan Ave., Chicago 4, Ill. Annual meeting, September 19-21, 1944, Hotel Stevens, Chicago, Ill.

SIGNAL APPLIANCE ASSOCIATION.—G. A. Nelson, Waterbury Battery Company, 30 Church St., New York 7, N. Y. Meets with A. A. R. Signal Section.

SOUTHERN AND SOUTHWESTERN RAILWAY CLUB.—A. T. Miller, 4 Hunter St., S. E., Atlanta, Ga. Regular meetings, third Thursday in January, March, May, July, September and November, Ansley Hotel, Atlanta, Ga.

SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—D. W. Brantley, C. of Ga., Savannah, Ga.

TORONTO RAILWAY CLUB.—D. M. George, P. O. Box 8, Terminal "A," Toronto 2, Ont. Regular meetings, fourth Monday of each month, except June, July and August, Royal York Hotel, Toronto, Ont.

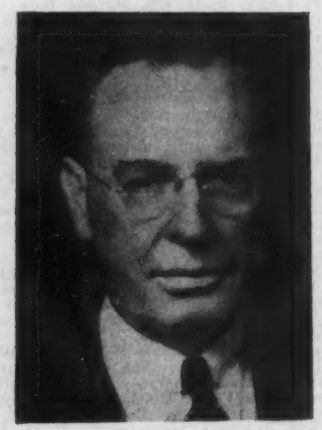
TRACK SUPPLY ASSOCIATION.—Lewis Thomas, Q. and C. Company, 59 E. Van Buren St., Chicago 5, Ill.

UNITED ASSOCIATIONS OF RAILROAD VETERANS.—Roy E. Collins, 112 Hatfield Place, Port Richmond, Staten Island 2, N. Y.

WESTERN RAILWAY CLUB.—E. E. Thulin, Suite 339, Hotel Sherman, Chicago, Ill. Regular meetings, third Monday of each month, except January, June, July, August and September, Hotel Sherman, Chicago, Ill.

Supply Trade

Harold S. Loomis, formerly assistant general manager, has been elected vice-president in charge of engineering of the **Union Switch & Signal Co.** and **Leonard C. Ritterbush,** formerly general sales manager, has been elected vice-president in charge of sales. **Richard H. Wood** has been appointed assistant general manager. Mr. Loomis entered railway service in the motive power department of the Pennsylvania in 1904. He was granted furloughs at various times to complete his regular school work and was graduated from the school of electrical engineering at Purdue University in 1909. He returned to the Pennsylvania as an apprentice in the signal department and was appointed assistant signal inspector with



Harold S. Loomis

headquarters in Philadelphia, Pa., in 1912. Later that year he was appointed assistant supervisor of signals on the West Jersey & Seashore and, in 1913, he was appointed assistant supervisor of signals of the Philadelphia division of the Pennsylvania. He joined the engineering department of the United Switch & Signal Co. in 1914 and was appointed in charge of the company's commercial engineering department in 1916.

Leonard C. Ritterbush

He was appointed assistant to the general manager in 1929 and elected assistant general manager in 1936.

Mr. Ritterbush joined the company in 1924 as a member of the commercial engineering department. He was appointed New York district engineer in 1930, a sales representative of the company in 1932 and assistant district manager at New York in 1937. He returned to Swissvale, Pa., as general sales manager in 1940. Mr. Wood was graduated from the electrical engineering school of Ohio State University and the Duquesne University Law School. He joined the Union Switch & Signal Co. as a member of the engineering department in 1922 and later worked in the company's

Richard H. Wood

patent department. He was appointed patent attorney in 1936 and assistant to the general manager in 1943.

Hunter Michaels, sales manager of the railway steel spring division of the **American Locomotive Company,** and **Hugh Corrough,** division manager of Alco products, have been appointed directors of their respective divisions of the company. Mr. Michaels has been with the company since 1927. Prior to that time he was connected with the National

Hunter Michaels

Dump Car Company, the American Car & Foundry Co., the Hart-Otis Company, the Rodger Ballast Car Company, the Union Metal Products Company, and the Railway Steel-Spring Company. He served as a 1st lieutenant with the engineers during the first world war. Mr. Corrough was graduated from Iowa State College. He was associated with the Empire Oil & Refining Co. in various capacities from 1923 until 1934, when he was appointed to an executive position with the Cities Service Oil Company. He joined the Alco products division of the American Locomotive Company in June, 1936, and served as chief

Hugh Corrough

mechanical engineer, assistant manager of engineering, manager of engineering, and manager of the Alco products division.

OBITUARY

Frank C. Worthington who retired as vice-president of the Western Wheeled Scraper Company, Aurora, Ill., in 1934, died in that city on August 6.

J. A. Schermerhorn, works manager of the American Welding Company, Carbondale, Pa., subsidiary of the American Car & Foundry Co., died August 3. He was 37 years of age.

Paul Clifford Cady, president of Paul C. Cady, Inc., a sales agency for railway and industrial supplies, died August 5. He was 67 years of age. Mr. Cady was born in Cleveland, Ohio, and received his education in Cleveland schools and at the Baldwin University Law School. He began his railroad career in the mechanical department of the Lake Shore & Michigan Southern in Cleveland and later was employed in the mechanical department of the New York Central in New York. He resigned as assistant to the chief mechanicol engineer of the New York Central in 1919 to enter the railway supply business.

Construction

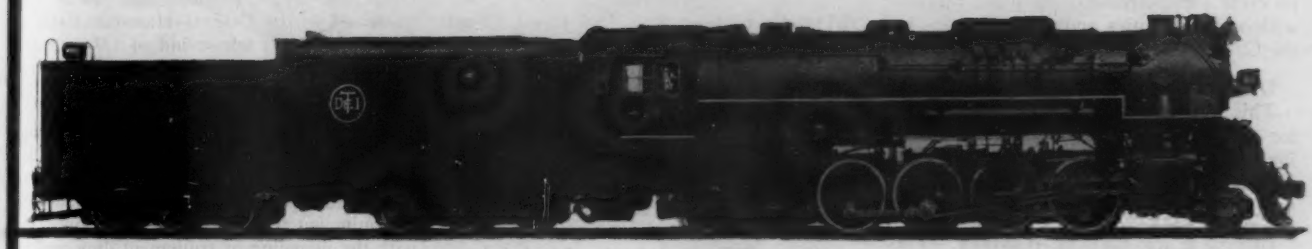
ATLANTIC COAST LINE.—This railroad has authorized the relocating of its double main line track and sidings at Wilson, N. C., at estimated cost of $47,400.

CHESAPEAKE & OHIO.—This road has applied to the Interstate Commerce Commission for authority to extend its West Fork sub-division (now under construction) an additional 1.8 miles in Boone County, W. Va.

CHICAGO, BURLINGTON & QUINCY.—A contract has been awarded to G. A. Johnson & Son, Chicago, for the construction of a 32-ft. by 100-ft. two-story addition to

News Department continued on next left-hand page

4 more 2-8-2's



LOCOMOTIVE CHARACTERISTICS	
Weight on Drivers	248,500
Weight on Engine	369,500
Diameter of Drivers	63 inches
Cylinders	23" x 30"
Boiler Pressure	260 lbs.
Fender Capacity (Fuel)	22 tons
Fender Capacity (Water)	22,000 gals.

FOR THE D. T. & I.

Into war-busy Detroit go thousands of tons of raw materials via the Detroit Toledo and Ironton. From Detroit to the seaports and thence overseas go the weapons of war.

With the addition of four more 2-8-2's the D. T. and I. has a fleet of 22 Lima-built locomotives in the job of keeping this heavy traffic flowing steadily.

LIMA LOCOMOTIVE WORKS — LIMA LOCOMOTIVE WORKS INCORPORATED — INCORPORATED, LIMA, OHIO

freight house No. 5 at 16th and Jefferson streets, Chicago. The addition will house a basement heater plant and locker rooms, an increase in freight facilities on the first floor, and office facilities on the second floor. The total cost of the improvement will be about $30,000.

CHICAGO & NORTH WESTERN.—This road has started a construction program totaling $158,123, which will include the following projects and contracts: Contract awarded to the Ogle Construction Company, amounting to $51,380, for the construction of a 250-ton reinforced concrete locomotive coaling plant, coaling track and relocation of two penstocks at Clyman Junction, Wis. The Gust Jacobson Construction Company has been awarded a contract, amounting to $30,960, for the construction of an extension to the engine house at Huron, S. D., to provide suitable quarters for handling Class J power. A contract has been awarded the James Leck Company, amounting to $23,300, for the construction of a 90-ft. addition to a freight house of the Chicago, St. Paul, Minneapolis & Omaha (part of the North Western System), at Minneapolis, Minn. A contract has been awarded the Ogle Construction Company, amounting to $52,483, for the construction of a 150-ton reinforced concrete locomotive coaling plant together with water facilities and track changes for the C. St. P. M. & O. at Spooner, Wis.

DELAWARE, LACKAWANNA & WESTERN.—This railroad has awarded a contract for the construction of a locomotive coaling, sanding and ash-handling plant at Elmira, N. Y., to the Ross & White Company of Chicago.

DENVER & RIO GRANDE WESTERN.—This road has awarded a contract, amounting to $185,000, to Lowdermilk Brothers, Denver, Colo., for 250,000 cu. yds. of grading at 11 different points in Western Colorado and Eastern Utah.

GRAND TRUNK WESTERN.—This road has awarded a contract, amounting to $58,500, to the Miller-Davis Company, Kalamazoo, Mich., for the construction of a freight house at Battle Creek, Mich., to replace a similar unit recently destroyed by fire.

LOUISVILLE & NASHVILLE.—This road has completed plans for the installation of automatic crossing gates at St. Matthews, Ky., at a cost of $21,531, and for the replacement of an interlocking plant at Athens, Ala., at a cost of $26,561.

PENNSYLVANIA. — This railroad has awarded a contract for the construction of a new turntable at its live stock yards at Mingo Junction, Ohio, at estimated cost of $150,000, to the Trimble Company, Pittsburgh, Pa.

WAR DEPARTMENT.—The U. S. Engineer offices, Louisville, Ky., has awarded a contract, amounting to $29,795, to the Henry Bickel Company, Louisville, for the construction of a railroad spur in Kentucky.

WAR DEPARTMENT.—The U. S. Engineer office, Los Angeles, Calif., has awarded a contract, amounting to $274,000, to Shannahan Brothers, Huntington Park, Calif., for the construction of a 200-car explosive hold yard in California.

Equipment and Supplies

FREIGHT CARS

The AMERICAN REFRIGERATOR TRANSIT COMPANY has received authority for the building of 300 40-ton refrigerator cars in the company's own shops. These are in addition to 100 cars of the same type authorized earlier this year and reported in the *Railway Age* of March 25.

IRON AND STEEL

The RICHMOND, FREDERICKSBURG & POTOMAC has ordered 5,357 gross tons of rail from the Bethlehem Steel Company for delivery in 1945.

SIGNALING

The CANADIAN PACIFIC has placed a contract with the General Railway Signal Company for a unit wire relay interlocking control machine to be located at Romford, Ont.

The PERE MARQUETTE has placed a contract with the General Railway Signal Company for a centralized traffic control system covering the territory between Grandville, Mich., and E. Saugatuck, a distance of 27.5 miles, on single track. The longest individual control from this machine which is located at Waverly, Mich., is 18.5 mi. In addition to the control machine, the order includes 8 model 5D switch machines, 39 type SA signals, and incidental materials.

Financial

BUSH TERMINAL.—*Lease.*—Division 4 of the Interstate Commerce Commission has authorized the Bush Terminal Railroad Co. to operate under lease the trackage and other railroad facilities of the Bush Terminal Co. at Brooklyn, N. Y., involving about 13.56 miles of line. Approval was made subject to certain conditions for the protection of any employees who may be adversely affected, and to the requirement that pick-up and delivery service should be continued and the 48th Street freight house made a station on the line. Restoration of l. c. l. freight car service was not required. The report deals at some length with a controversy between the Bush Terminal and the trunk line railroads serving the Port of New York as to divisions, and indicates that the question should be submitted to the commission for its determination unless definite agreements are reached between the parties within three months. The examiner's recommendations in this proceeding were noted in *Railway Age* of April 15, page 754.

ERIE.—*Equipment Trust Certificates.*—Division 4 of the Interstate Commerce Commission has authorized this company to assume liability for $3,620,000 of 1⅞ per cent equipment trust certificates of 1944, sold at 100.1285 to the Guaranty Trust Co. of New York, in connection with the purchase of 600 50-ton all-steel hopper cars at a unit cost of $2,589, and 6 5,400-hp. Diesel-electric freight locomotives at a unit cost of $498,400, making the total estimated cost of the equipment $4,549,656. It was pointed out that this road's funded debt has been reduced $22,107,130 since reorganization.

ILLINOIS TERMINAL.—*Equipment Issue Awarded.*—On July 26 the First National Bank of St. Louis, Mo., was awarded the Illinois Terminal's $690,000 issue of equipment trust certificates on a bid of 100.3677 for a 2 per cent coupon. The certificates, to be secured by equipment costing $869,000, will mature in 20 semi-annual installments. (Previous item in *Railway Age* of July 15.)

NEW YORK, NEW HAVEN & HARTFORD.—*Promissory Notes.*—Trustees of this road have been authorized by the Interstate Commerce Commission, Division 4, to issue at par not exceeding $4,925,520 of promissory notes in evidence of the unpaid portion of the purchase price of 42 Diesel-electric locomotives to be acquired from the American Locomotive Company at a total cost of $6,158,820. The notes will be issued to the Central Hanover Bank & Trust Company, whose bid of 1.9 per cent was the lowest of four received in response to 41 invitations.

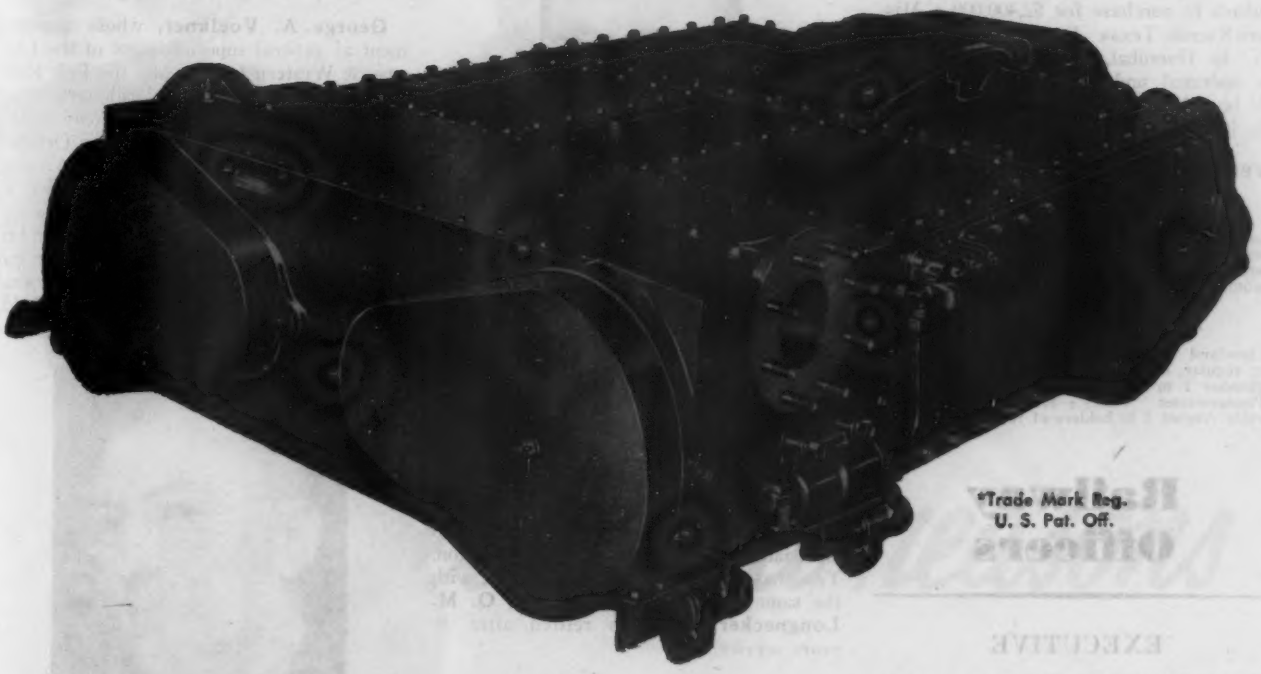
NEW YORK CENTRAL.—*Equipment Trust Certificates.*—This road has applied to the Interstate Commerce Commission for authority to assume liability for $15,500,000 of equipment trust certificates in connection with the financing of equipment expected to cost $21,067,000. The equipment will consist of 4,000 steel box cars, 1,000 steel hopper cars, 31 Diesel-electric locomotives, one steam locomotive of the 4-8-4 type, and 50 locomotive tenders. The certificates would be dated September 1 and mature annually in 10 equal installments from September 1, 1945, to September 1, 1954. They would be sold on the basis of competitive bids, with the successful bidder naming the dividend rate.

READING.—*Merger of Subsidiaries.*—Division 4 of the Interstate Commerce Commission has authorized the merger of the properties of the Catasauqua & Fogelsville and the Philadelphia & Reading Terminal into the Reading, and has authorized the latter company, which owns all the capital stock of the two merged companies, to assume liability in respect of $6,950,000 of the terminal company's first mortgage bonds. The subsidiary companies will be eliminated and the system corporate structure simplified.

SEABOARD AIR LINE.—*Sale of Subsidiaries.*—All properties of the Seaboard-All Florida, the Florida, Western & Northern and the East & West Coast, which are controlled and operated under lease by the Seaboard Air Line, will be sold at public auction on September 1, in Miami, Fla., in accordance with a final decree of foreclosure and sale entered July 18 in the United States district court for the southern district of Florida. Minimum upset

News Department continued on next left-hand page

The TYPE "E" BOOSTER*



*Trade Mark Reg. U. S. Pat. Off.

A new Booster to meet new conditions

For today's increasingly exacting demands the Franklin Railway Supply Company, Inc., has developed a new Booster, which meets the requirements brought about by higher boiler pressures and new factors in current steam locomotive operation.

The short cut-off, the cast steel cylinders with large steam and exhaust passages, and a new design of ball joint, with self-adjusting packing, secure maximum efficiency and economy in the use of steam.

A special starting device enables the Booster to develop maximum starting effort, and a new air control permits engagement at higher speed. Other outstanding features include dynamic balancing and a roller bearing crank shaft, securely housed in the engine bed.

Every element in its construction is designed to increase the operating effectiveness of the Booster.

FRANKLIN RAILWAY SUPPLY COMPANY, INC.

NEW YORK • CHICAGO

In Canada: FRANKLIN RAILWAY SUPPLY COMPANY, LIMITED, MONTREAL

prices for the properties fixed in the court decree are as follows: Seaboard-All Florida, $2,340,580; Florida, Western & Northern, $7,006,420; East & West Coast, $3,000. Sales will be subject to court confirmation and prior I. C. C. approval for the bidders to operate the properties. Receivers for the Seaboard have been authorized by Federal Judge W. C. Chestnut to bid for the properties.

WABASH-MISSOURI-KANSAS-TEXAS.—*Acquisition.*—Division 4 of the Interstate Commerce Commission has authorized the Wabash to purchase for $2,400,000 a Missouri-Kansas-Texas line from Moberly, Mo., to Hannibal, 69.75 miles, which it has operated under lease. The property will be paid for in cash from funds available in the purchaser's treasury.

Average Prices Stocks and Bonds

	Aug. 8	Last week	Last year
Average price of 20 representative railway stocks..	40.90	41.65	36.76
Average price of 20 representative railway bonds..	89.06	89.29	78.86

Dividends Declared

Cleveland & Pittsburgh.—Special guaranteed, 50c; regular, 87½c; both quarterly, both payable September 1 to holders of record August 10.

Pemigewasset Valley.—$1.50, semi-annually, payable August 1 to holders of record July 19.

Railway Officers

EXECUTIVE

Wilson Runnette, vice-president of the Tuskegee, with headquarters at Tuskegee, Ala., has been elected president, with the same headquarters.

G. L. Leitner, general agent of the St. Louis Southwestern, with headquarters at Detroit, Mich., has been promoted to executive general agent, with the same headquarters.

FINANCIAL, LEGAL AND ACCOUNTING

W. T. Bradburn has been appointed assistant general freight claim agent of the Baltimore & Ohio.

George O. O'Donnell has been appointed general attorney of the Central of Georgia.

J. P. Nye, formerly general manager and auditor of the Rapid City, Black Hills & Western, has been elected secretary-treasurer of the American Short Line Railroad Association with headquarters at Washington, D. C.

John J. Phillips, whose promotion to general claim agent of the Illinois Central, with headquarters at Memphis, Tenn., was reported in the *Railway Age* of July 22, was born at Pana, Ill., on May 11, 1894, and entered railway service with the Illinois Central in August, 1912, as a clerk at Pana. On October 1, 1915, he was promoted to chief clerk of the division engineer, with headquarters at Clinton, Ill., and in 1917 he was given a leave of absence to enter the armed forces during World War I. In February, 1919, Mr. Phillips returned to his position with the I. C. at Clinton, and on July 16, 1926, he was advanced to claim

John J. Phillips

agent, with headquarters at Grenada, Miss., being transferred to Jackson, Tenn., one year later. On February 1, 1944, he was appointed chief clerk and claim agent, with headquarters at Chicago, the position he held at the time of his new promotion.

J. C. Gainey, assistant to the treasurer of the Southern Pacific Lines in Texas and Louisiana, with headquarters at Houston, Tex., has been promoted to treasurer, with the same headquarters, succeeding **O. M. Longnecker,** who has retired after 46 years service.

OPERATING

J. C. McCuaig has been appointed general safety agent, eastern lines, of the Canadian Pacific, with headquarters at Toronto, Ont.

S. A. Neville, general manager and traffic manager of the Meridian & Bigbee River, with headquarters at Meridian, Miss., has retired because of ill health.

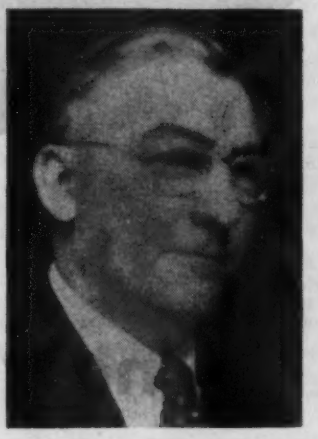
L. L. McIntyre, general superintendent of the Clinchfield with headquarters at Erwin, Tenn., has been appointed assistant general manager, with the same headquarters.

G. T. Dunn has been appointed superintendent, Hornepayne division, of the Canadian National, with headquarters at Hornepayne, Ont. He was formerly assistant superintendent at Capreol, Ont.

F. M. Rutter, assistant district engineer of the British Columbia district of the Canadian Pacific, with headquarters at Vancouver, B. C., has been promoted to assistant to the general superintendent of that district, with the same headquarters.

Harland H. Best, whose promotion to general manager of the Toledo, Peoria & Western, with headquarters at Peoria, Ill., was reported in the *Railway Age* of August 5, was born at Williamsfield, Ill., on October 11, 1894, and entered railway service on June 16, 1909, in the bridge and building department of the T. P. & W. In 1917 he was granted a leave of absence to enter the U. S. Army and served 18 months in France with the A. E. F., returning to his position with the railroad in March, 1919. On January 9, 1922, Mr. Best was promoted to assistant master of bridges and buildings, with headquarters at Peoria, and on March 1, 1931, he was advanced to master of bridges and buildings, with the same headquarters. Six years later he was promoted to superintendent, the position he held at the time of his new appointment.

George A. Voelkner, whose appointment as general superintendent of the Chicago & Western Indiana and the Belt Railway of Chicago, with headquarters at Chicago, was reported in the *Railway Age* of August 5, was born at Chicago on October 15, 1888, and is a graduate of the Armour Institute. He entered railway service in June, 1908, as a power plant oiler of the C. & W. I., and later served in a number of positions, including foreman of electrical and telephone maintenance, and general foreman of construction. In October, 1915, he went with the Belt Railway of Chicago



George A. Voelkner

as chief electrician, later being promoted to supervisor of telephone and telegraph, and to electrical engineer, with headquarters at Chicago. In June, 1937, Mr. Voelkner returned to the C. & W. I. as assistant superintendent at Chicago, and one year later he was promoted to superintendent, with the same headquarters. In January, 1940, Mr. Voelkner went with the Lehigh Valley as assistant to the general manager, with headquarters at Bethlehem, Pa. In the next two years he served that road as general superintendent, assistant general manager and general manager, with the same headquarters, and in March, 1942, he resigned to become assistant Federal manager of the Toledo, Peoria & Western, later being promoted to general manager, with headquarters at Peoria, Ill., the position he held until resigning to accept his new appointment.

Daniel Healy, assistant division superintendent of the Northern Pacific, with headquarters at Livingston, Mont., has been promoted to superintendent of the Rocky Mountain division, with headquarters at Missoula, Mont., succeeding **D. S. Colby,** who has been transferred to the Idaho division, with headquarters at Spokane, Wash.,

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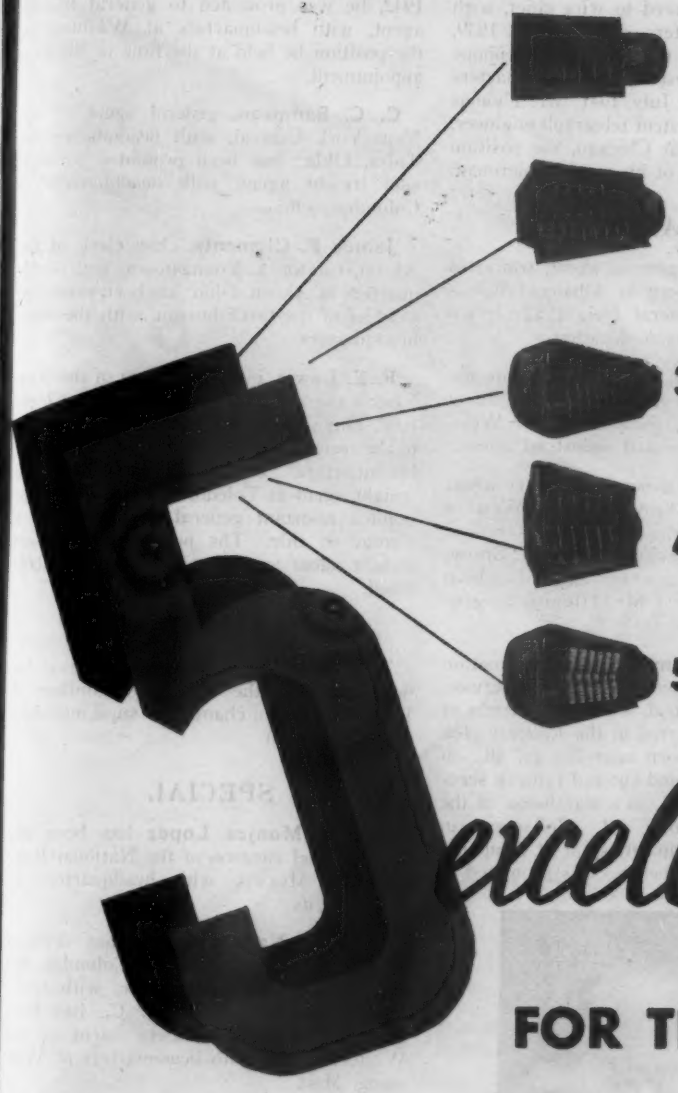

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2. Reduced honeycombing

3. Reduced flue plugging

4. Reduced cinder cutting

5. Better arch brick support

5 excellent reasons

FOR THE INSTALLATION OF

4713 SECURITY CIRCULATORS

ALL OF WHICH RESULTS IN GREATLY INCREASED *LOCOMOTIVE AVAILABILITY*

AMERICAN ARCH COMPANY, Inc.
SECURITY CIRCULATOR DIVISION
NEW YORK

replacing **F. G. Cook**, who has been appointed assistant division superintendent at Livingston.

A. H. Lobeck and **P. L. Pflager**, acting district superintendents of the Pullman Company, with headquarters respectively at Denver, Colo., and Portland, Ore., have been promoted to district superintendents with the same headquarters.

Gerald R. Kronblad, supervisor of personnel of the Toledo, Peoria & Western, with headquarters at Peoria, Ill., has been advanced to superintendent, with the same headquarters, succeeding **Harlan H. Best**, whose promotion to general manager was reported in the *Railway Age* of August 5.

A. G. Kasson, assistant superintendent of the Clover Leaf district of the New York, Chicago & St. Louis (Nickel Plate), with headquarters at Frankfort, Ind., has been promoted to superintendent of that district, with the same headquarters, succeeding **Ogden Pierce**, whose recent death was reported in the *Railway Age* of August 5.

W. C. Smith, chief engineer of the Detroit Terminal, with headquarters at Detroit, Mich., has been appointed acting general manager, with the same headquarters, succeeding **D. G. Cohan**, whose death on July 18 is reported elsewhere in these columns. **W. M. Jones**, yardmaster at Detroit, has been promoted to superintendent, with the same headquarters.

A. W. Hoffman, trainmaster of the Yellowstone division of the Northern Pacific, with headquarters at Glendive, Mont., has been promoted to assistant superintendent of that division, with the same headquarters, a newly-created position. **E. S. Ulyatt**, trainmaster of the Fargo division, with headquarters at Jamestown, N. D., has been advanced to assistant superintendent of that division, with the same headquarters, also a newly-created position.

ENGINEERING & SIGNALING

Lilburn R. Thomas, whose promotion to electronic engineer of the Atchison, Topeka & Santa Fe, with headquarters at Chicago, was reported in the *Railway Age* of August 5, was born at Odessa, Mo., on May 18, 1911, and entered railway service in September, 1928, as an apprentice telegraph operator at Needles, Calif. In June, 1934, he was promoted to wire chief, with the same headquarters, and in July, 1939, he was advanced to telegraph and telephone supervisor of the system, with headquarters at Topeka, Kan. In July, 1941, Mr. Thomas was advanced to system telegraph engineer, with headquarters at Chicago, the position he held at the time of his new appointment.

Lilburn R. Thomas

TRAFFIC

J. D. Weston, general agent, traffic, of the Georgia Northern at Albany, Ga., has been appointed general freight agent, solicitation, at the same location.

D. F. Merriam, in addition to his position of assistant general freight agent of the New York, Susquehanna & Western, has been appointed industrial agent.

J. A. Higgins, general passenger agent of the Atlanta & West Point, the Western of Alabama, and the Georgia, has retired after 49 years of service, and **W. W. Snow**, assistant general passenger agent, has been appointed to succeed Mr. Higgins as general passenger agent.

Oscar L. Grisamore, whose promotion to freight traffic manager, sales and service, of the Illinois Central, with headquarters at Chicago, was reported in the *Railway Age* of July 29, was born near Neoga, Ill., on February 3, 1894, and entered railway service on June 27, 1911, in a warehouse of the I. C. at Champaign, Ill. He served in various minor capacities at Champaign until May, 1917, when he was promoted to cashier, with the same headquarters. In June of that year Mr. Grisamore enlisted in the U. S. Marine Corps, and in 1919 he returned to the I. C. as a tariff clerk of the general freight office at Chicago. On May 1, 1920, he was advanced to traveling freight and passenger agent, with headquarters at Sioux City, Iowa, and one year later he was transferred to Carbondale, Ill. From 1922 to 1928 he served as assistant chief clerk and chief clerk of the general freight agent at Chicago, and on July 16 of the latter year he was advanced to assistant general freight agent, solicitation, with the same headquarters. On February 1, 1939, Mr. Grisamore was placed on special duty at Chicago, and two years later he was assigned to supervise solicitation of traffic involved in national defense, with headquarters at Washington, D. C. On May 16, 1942, he was promoted to general freight agent, with headquarters at Washington, the position he held at the time of his new appointment.

Oscar L. Grisamore

C. C. Sampson, general agent of the New York Central, with headquarters at Tulsa, Okla., has been promoted to division freight agent, with headquarters at Columbus, Ohio.

James F. Clements, chief clerk of the Akron, Canton & Youngstown, with headquarters at Akron, Ohio, has been promoted to chief of the tariff bureau, with the same headquarters.

F. E. Lewis, industrial agent of the New York Central, with headquarters at Cleveland, Ohio, has been promoted to assistant to the freight traffic manager, with the same headquarters. **E. G. Howard**, division freight agent at Toledo, Ohio, has been appointed assistant general freight agent, a change of title. The position of division freight agent at that point has been abolished.

MECHANICAL

The title of **N. H. Craig**, supervisor car department of the Toronto, Hamilton & Buffalo, has been changed to superintendent car department.

SPECIAL

Dr. A. Monjes Lopez has been appointed chief surgeon of the National Railways of Mexico, with headquarters at Mexico City.

I. J. McNaughtan, assistant division superintendent of the British Columbia district of the Canadian Pacific, with headquarters at Vancouver, B. C., has been promoted to general safety agent of the Western Lines, with headquarters at Winnipeg, Man.

Miss D. C. Hendren, secretary to the general manager of the Toledo, Peoria & Western, with headquarters at Peoria, Ill., has been advanced to supervisor of personnel, with the same headquarters, succeeding **Gerald R. Kronblad**, whose promotion to superintendent is reported elsewhere in this issue.

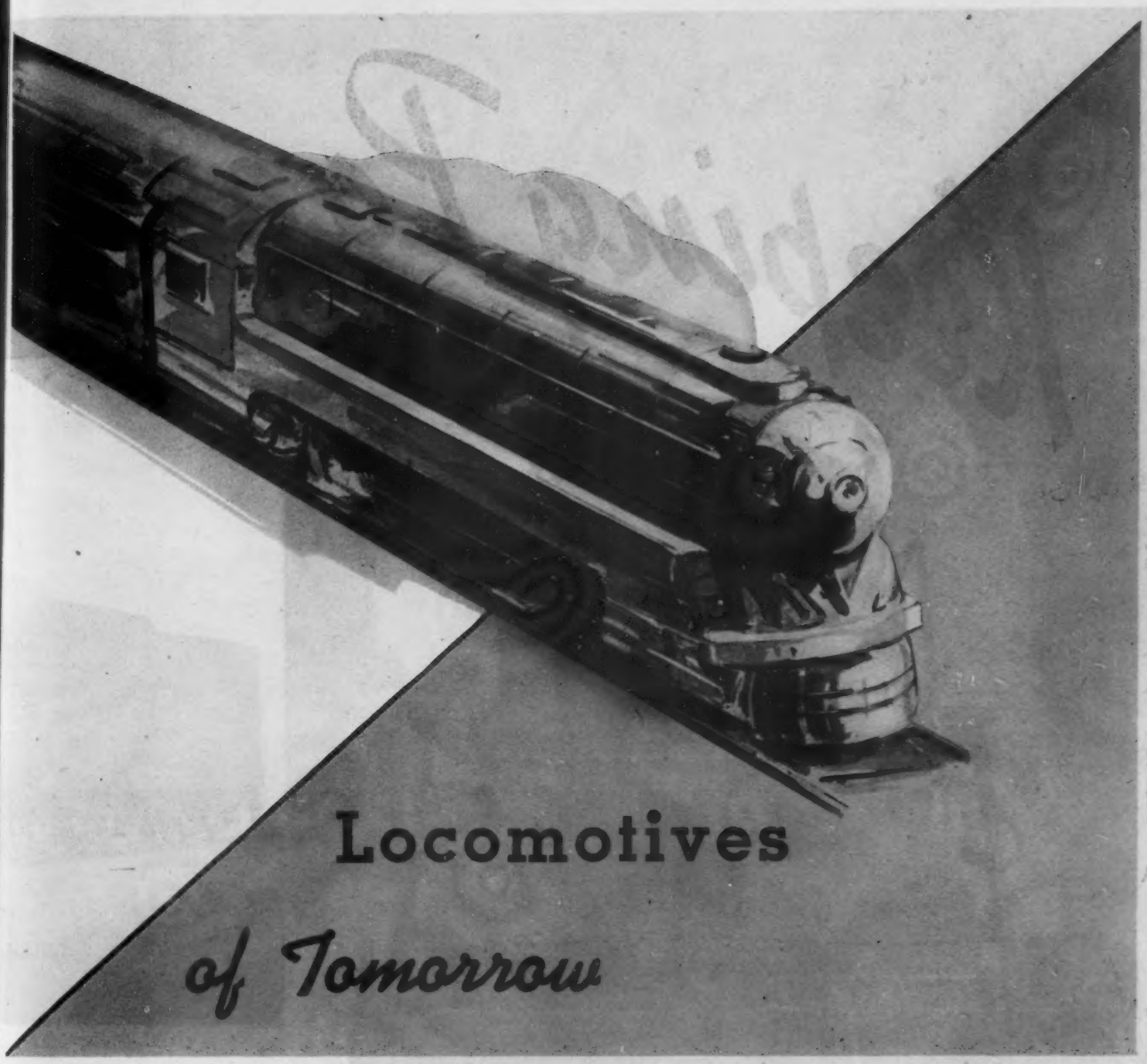
OBITUARY

D. G. Cohan, general manager of the Detroit Terminal, with headquarters at Detroit, Mich., died at Saginaw, Mich., on July 18, while on a visit to that city.

Michael A. Maher, general agent of the Elgin, Joliet & Eastern, with headquarters at Joliet, Ill., died in a hospital in that city on August 4.

WOMEN IN RAILROADING.—What is probably the last bastion of exclusive masculine dominance in railroading—the Alaska Railroad—is now being invaded by feminine labor, according to "Business Week." The road is said to be launching a campaign to attract eligible women employees between the ages of 18 and 50 who will be paid men's wages and receive standard pensions, 26-day annual leaves, and 15-day sick leaves.

Table of Revenues and Expenses appears on second left-hand page



Locomotives of Tomorrow

". . . The locomotive power of the future will be varied, depending on needs in particular situations . . . but for a long while to come, the bulk of the service will be accomplished by steam engines. . . . In horsepower per axle, per pound of fuel, and especially in performance ability at speeds above forty miles per hour, the steam engine has shown startling development in the past generation, *with every promise of more to come.*" (Emphasis supplied)

—ASSOCIATION OF AMERICAN RAILROADS
May, 1944

A-1668

ELESCO

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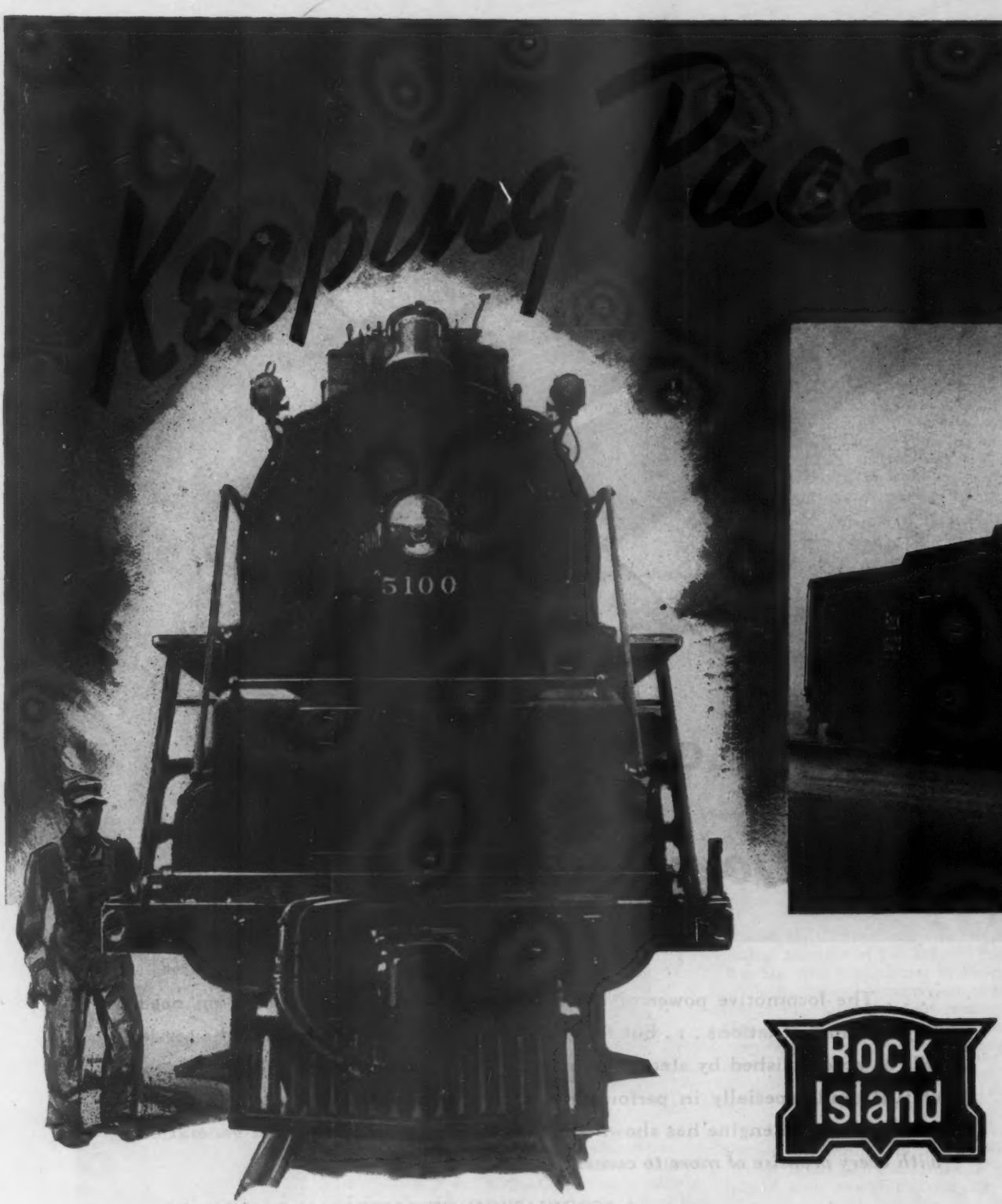
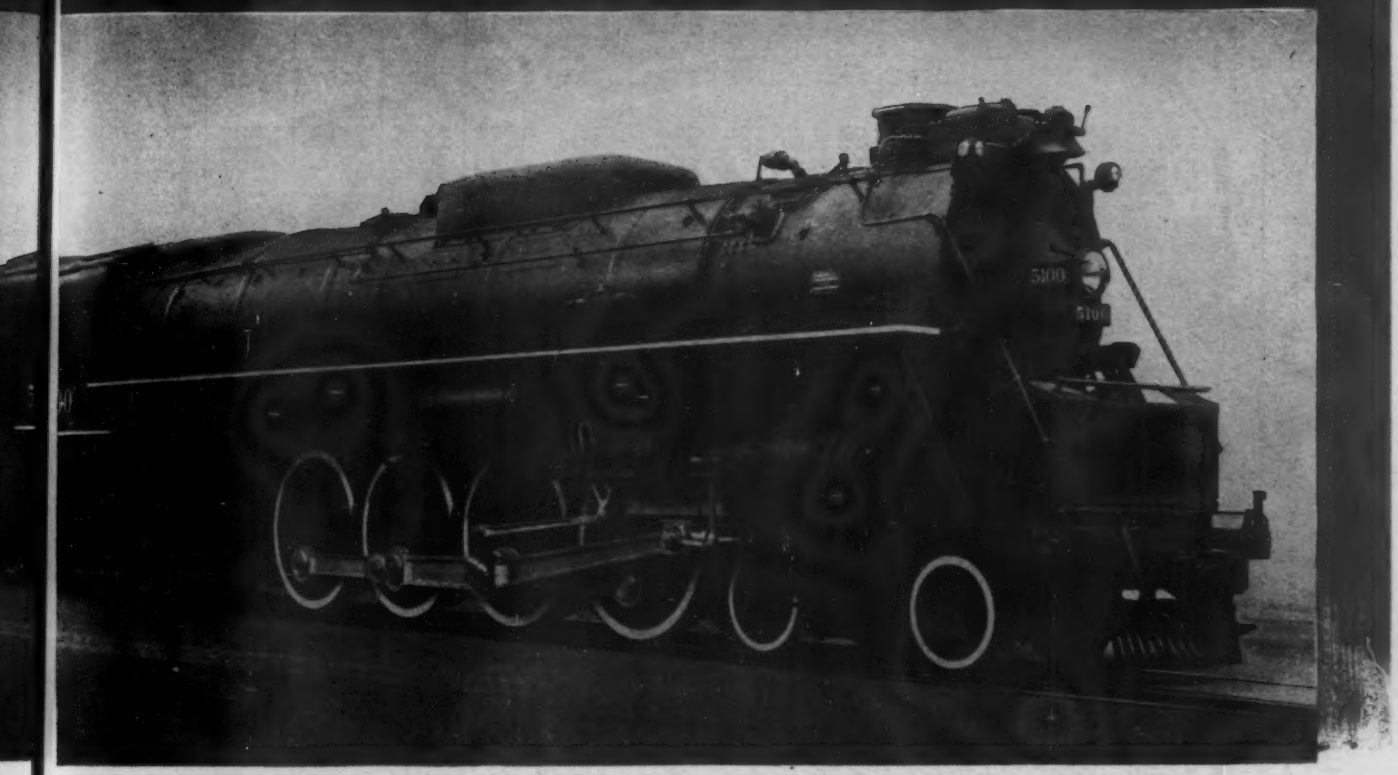


Buy War Bonds

WITH THE NATION'S NEEDS



Ten (10) Alco ultra-modern 4-8-4s, especially designed for high-speed mixed service, have been delivered recently to the Rock Island.

Locomotive Characteristics

Weight on Drivers	280,000 Lb.	Boiler Pressure	270 Lb.
Weight of Engine	467,000 Lb.	Tractive Power	67,000 Lb.
Cylinders	26 x 32 Ins.	Tender Capacity, Fuel	5,500 Gals.
Diameter of Drivers	74 Ins.	Tender Capacity, Water	21,500 Gals.

Alco

AMERICAN LOCOMOTIVE

MANUFACTURERS OF MOBILE POWER

STEAM, DIESEL AND ELECTRIC LOCOMOTIVES, MARINE DIESELS, TANKS, GUN CARRIAGES & OTHER ORDNANCE

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF JUNE AND SIX MONTHS OF CALENDAR YEAR 1944—CONTINUED

Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of: Way and structures	Equipment	Traffic	Transportation	Total	Operating ratio	Net from railway operation	Operating income	Net railway operating income: 1944	1943
Akron, Canton & Youngstown	June	171	$345,667	$173	$364,012	$68,462	$36,074	$16,313	$112,607	$252,913	69.5	$111,099	$66,801	$50,995	$58,674
	6 mos.	171	2,176,862	846	2,275,038	368,780	215,146	111,191	665,949	1,469,456	64.6	805,582	501,382	406,566	529,204
Alton	June	959	1,988,430	991,727	3,301,502	454,234	463,088	75,000	1,904,828	2,133,681	64.6	1,167,821	375,876	268,047	214,808
	6 mos.	959	11,809,708	4,657,047	18,455,342	2,447,462	2,587,578	408,093	6,072,386	12,303,269	66.7	6,152,073	3,604,401	2,252,893	2,402,532
Atchison, Topeka & Santa Fe System	June	13,093	31,510,069	10,488,239	44,999,810	5,678,893	6,674,397	632,130	11,664,076	25,226,873	56.1	19,772,937	4,967,461	4,561,678	5,218,853
	6 mos.	13,113	170,393,025	57,069,213	245,415,399	30,150,166	39,268,504	3,712,586	67,052,367	144,039,180	58.7	101,376,219	26,115,403	24,793,122	30,847,749
Atlanta & West Point	June	93	286,230	163,309	492,213	56,366	65,141	10,020	162,797	313,648	63.5	179,355	66,278	33,016	44,771
	6 mos.	93	1,636,393	930,535	2,823,586	281,152	336,243	59,011	942,804	1,735,654	61.4	1,088,722	358,118	194,386	250,970
Western of Alabama	June	133	272,298	167,130	473,385	48,435	66,608	10,258	151,326	294,581	62.2	178,804	59,491	46,858	55,246
	6 mos.	133	1,644,770	937,674	2,794,572	303,770	374,508	61,251	899,658	1,745,246	62.5	1,049,326	328,882	282,883	330,708
Atlanta, Birmingham & Coast	June	639	527,966	59,878	615,243	107,203	96,249	27,562	237,558	492,766	80.1	122,477	87,135	54,862	50,041
	6 mos.	639	3,349,587	292,691	3,829,553	660,931	604,668	170,104	1,463,275	3,033,784	79.2	795,769	424,636	205,638	487,790
Atlantic Coast Line	June	4,962	8,404,103	3,775,420	12,814,988	1,335,904	1,998,220	177,478	3,761,962	7,676,698	59.9	5,138,290	1,638,290	1,263,262	1,481,858
	6 mos.	4,962	54,097,424	23,112,236	82,154,435	7,150,094	11,817,182	1,116,130	23,095,165	45,583,638	55.5	36,570,797	11,570,797	8,634,238	10,705,028
Charleston & Western Carolina	June	343	350,052	12,229	370,570	39,024	56,547	11,286	109,923	223,341	60.3	147,229	87,229	86,557	62,622
	6 mos.	343	2,237,620	68,191	2,358,886	321,714	348,652	60,701	712,269	1,484,460	62.9	874,426	484,426	470,142	542,066
Baltimore & Ohio	June	6,144	28,082,735	4,460,174	34,242,877	5,532,860	6,612,418	498,083	10,585,388	24,324,641	71.0	9,918,236	4,712,822	3,849,261	4,631,285
	6 mos.	6,148	156,058,595	24,291,082	189,743,529	27,229,999	38,616,149	2,869,133	63,176,882	138,267,704	72.9	51,475,825	27,272,771	22,909,775	34,201,707
Staten Island Rapid Transit	June	24	367,542	118,800	495,398	102,105	37,687	1,219	111,514	279,784	56.5	215,614	132,351	115,662	127,916
	6 mos.	24	1,920,892	649,131	2,619,929	296,171	224,739	7,694	711,119	1,399,801	53.4	1,220,128	771,991	647,072	489,361
Bangor & Aroostook	June	602	441,499	77,911	567,312	139,142	124,707	5,589	161,928	463,849	81.8	103,463	−8,505	31,213	34,425
	6 mos.	602	4,452,040	423,380	5,082,886	830,668	708,525	37,461	1,286,641	3,057,862	60.2	2,025,024	734,542	833,502	1,067,889
Bessemer & Lake Erie	June	214	2,246,252	2,145	2,261,676	153,058	747,319	13,085	370,967	1,324,782	58.6	936,894	508,093	633,801	211,701
	6 mos.	214	8,889,684	10,724	8,987,706	889,519	4,324,568	85,669	1,964,049	7,516,717	83.6	1,470,989	483,301	1,695,840	193,635
Boston & Maine	June	1,819	5,144,049	1,614,912	7,439,520	1,129,144	1,200,275	84,571	2,602,809	5,250,433	70.6	2,189,087	1,289,308	986,343	1,075,196
	6 mos.	1,819	30,326,307	9,058,120	43,285,825	6,852,667	7,364,044	455,078	15,952,205	32,059,535	74.1	11,226,290	6,536,922	4,793,947	6,555,070
Burlington, Rock Island	June	228	167,798	61,204	244,555	28,144	26,327	3,049	79,360	152,347	62.3	92,208	82,705	46,212	95,333
	6 mos.	228	870,454	374,763	1,326,275	159,705	146,609	18,819	439,798	855,565	64.5	470,710	414,802	245,342	379,772
Cambria & Indiana	June	35	153,279	.....	153,373	15,621	52,802	538	17,519	92,785	60.50	60,588	−23,883	52,744	−22,408
	6 mos.	35	964,473	.....	964,886	66,235	293,364	3,528	119,789	524,461	54.35	440,425	−148,877	322,580	177,021
Canadian Pacific Lines in Maine	June	234	311,854	80,547	422,510	82,067	63,664	6,738	133,416	294,779	69.8	127,731	106,274	77,360	206,033
	6 mos.	234	2,627,703	452,841	3,252,986	313,465	465,169	37,954	974,385	1,858,408	57.1	1,394,578	1,261,747	1,044,832	1,058,777
Canadian Pacific Lines in Vermont	June	90	79,263	27,914	120,595	48,288	32,779	2,442	83,209	171,327	142.1	−50,732	−60,619	−90,331	−87,839
	6 mos.	90	517,610	114,434	706,050	220,777	201,153	13,860	546,084	1,013,500	143.5	−307,450	−363,573	−547,097	−439,857
Central of Georgia	June	1,815	2,271,855	738,183	3,274,115	419,261	509,754	69,580	1,159,870	2,308,373	70.5	965,742	700,456	636,611	647,533
	6 mos.	1,815	13,397,534	4,201,879	19,310,557	2,484,303	3,030,531	423,432	6,995,226	13,783,215	71.4	5,527,342	3,477,585	3,051,058	4,552,259
Central of New Jersey	June	655	4,126,990	613,828	5,041,295	529,856	897,460	57,145	1,941,419	3,600,345	71.4	1,440,950	806,473	498,570	382,633
	6 mos.	655	25,051,425	3,529,428	30,428,653	3,360,776	5,565,780	311,182	12,928,214	23,132,556	76.0	7,296,097	4,316,011	2,270,476	3,388,964
Central Vermont	June	422	607,436	82,000	734,346	114,514	118,750	10,250	324,489	593,142	80.8	141,204	95,806	58,077	221,831
	6 mos.	422	3,652,706	406,000	4,380,459	646,745	675,548	60,503	1,913,721	3,452,398	78.8	928,061	654,169	373,043	691,648
Chesapeake & Ohio	June	3,073	15,823,713	2,055,026	18,562,320	2,274,110	3,508,953	235,977	4,670,858	11,239,862	60.6	7,322,458	2,485,889	2,825,826	2,578,180
	6 mos.	3,073	93,284,684	12,105,486	109,116,287	12,748,756	21,215,938	1,459,669	28,315,917	67,200,660	61.6	41,915,627	14,561,953	16,673,634	18,065,537
Chicago & Eastern Illinois	June	912	2,099,417	627,365	2,956,053	422,357	470,925	67,814	979,682	2,062,786	69.8	893,267	582,267	345,938	288,107
	6 mos.	912	12,055,278	3,673,066	17,225,306	2,055,020	2,696,702	378,909	6,165,432	11,959,107	69.4	5,266,199	3,507,199	1,966,097	2,243,211
Chicago & Illinois Midland	June	131	606,177	1,541	639,207	73,442	87,932	22,018	144,321	355,268	55.6	283,939	93,081	97,958	58,664
	6 mos.	131	3,348,297	8,574	3,529,704	427,167	534,917	133,101	855,123	2,113,602	59.9	1,416,102	482,361	495,073	479,737
Chicago & North Western	June	8,077	9,408,082	3,508,622	14,204,516	1,943,663	2,585,936	220,527	4,433,076	9,679,725	68.1	4,524,791	2,040,177	2,040,946	2,958,637
	6 mos.	8,093	55,116,907	17,882,083	80,752,431	10,860,920	14,861,154	1,275,066	27,382,915	57,351,261	71.0	23,401,170	11,697,277	11,850,393	15,250,034
Chicago, Burlington & Quincy	June	8,991	14,717,392	3,509,996	19,854,763	3,830,309	2,814,057	310,633	5,012,437	12,563,278	63.3	7,291,485	1,933,981	1,629,002	1,408,377
	6 mos.	8,991	86,316,620	19,943,768	115,960,151	17,911,600	16,053,979	1,724,203	30,046,571	69,278,539	59.7	46,681,612	14,502,176	12,669,368	22,182,469
Chicago Great Western	June	1,500	2,086,299	234,574	2,499,388	406,487	338,535	64,620	928,227	1,813,790	72.6	685,598	421,060	259,250	290,066
	6 mos.	1,500	12,760,212	1,441,371	15,325,813	2,155,011	1,925,880	385,468	5,573,798	10,496,237	68.5	4,829,576	2,644,258	1,661,581	1,752,399
Chicago, Indianapolis & Louisville	June	541	967,980	108,139	1,156,083	158,805	198,000	31,650	361,291	831,597	71.9	324,486	227,413	192,573	266,810
	6 mos.	541	5,770,413	651,247	6,913,627	731,387	1,133,668	193,516	2,142,453	4,485,097	64.9	2,428,530	1,728,054	1,482,478	1,691,776

Table of Revenues and Expenses continued on third right-hand page

Guard Power — Save Fuel

HERE

with **HSGI** WEAR RESISTING PARTS

Here, at the valves and cylinders, Energy becomes Motion. *Here*, Power may be sabotaged by frictional wear and steam leaks. So it is *here* that quality material counts most.

Liners, packing rings, pistons, and other vital parts must be watched closely and replaced when wear becomes critical; that's good railroad practice. Good railroad practice, too, is to use HUNT-SPILLER *Air Furnace* GUN IRON, the preferred material for that purpose. HSGI'S superiority is proven by cost records and performance figures; this close-grained homogeneous iron wears slowly and is easy to machine. For greatest savings, use *all* the HSGI parts.

HSGI
Reg. U. S. Trade Mark
Cylinder Bushings
Cylinder Packing Rings
Pistons or Piston Bull Rings
Valve Bushings
Valve Packing Rings
Valve Bull Rings
Crosshead Shoes
Hub Liners
Shoes and Wedges
Floating Rod Bushings

Finished Parts
Dunbar Sectional Type Packing
Duplex Sectional Type Packing for Cylinders and Valves
(Duplex Springs for Above Sectional Packing)
Cylinder Snap Rings
Valve Rings, All Shapes
Light Weight Valves
Cylinder Liners and Pistons for Diesel Service

HUNT SPILLER MFG. CORPORATION
V. W. Ellet, *President* **E. J. Fuller, *Vice-Pres. & Gen. Mgr.***

Office & Works
383 Dorchester Ave. **South Boston 27, Mass.**
Canadian Representative: Joseph Robb & Co., Ltd., 5575 Cote St. Paul Rd., Montreal, P. Q.
Export Agent for Latin America:
International Rwy. Supply Co., 30 Church Street, New York, N. Y.

HUNT-SPILLER GUN IRON
Air Furnace

1876

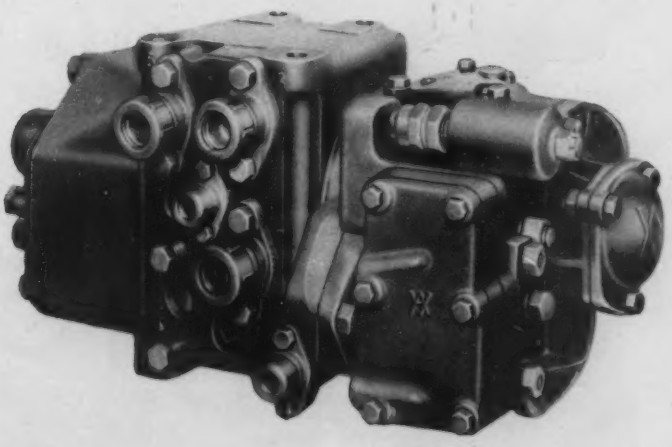
The marvel that kept on growing

Tens of thousands of foot-sore and goggle-eyed visitors tramped up and down the aisles at the Philadelphia Centennial Exposition, viewing the array of marvels that had been assembled from the four corners of the earth. Among the crowd was the entire staff of the Westinghouse Air Brake Company, for George Westinghouse—with characteristic generosity—had loaded every employee from plant superintendent to office boy aboard a special train, and brought them to the big show.

The Westinghouse Air Brake exhibit was only one of hundreds. But probably no other one was destined to more vitally affect the lives of unborn future generations. During succeeding years the railroads—more than any other factor—developed modern America. And the air brake, by continuous improvement and progress, has helped the railroads to work this miracle.

75 Years of Pioneering

WESTINGHOUSE AIR BRAKE COMPANY, WILMERDING, PA.



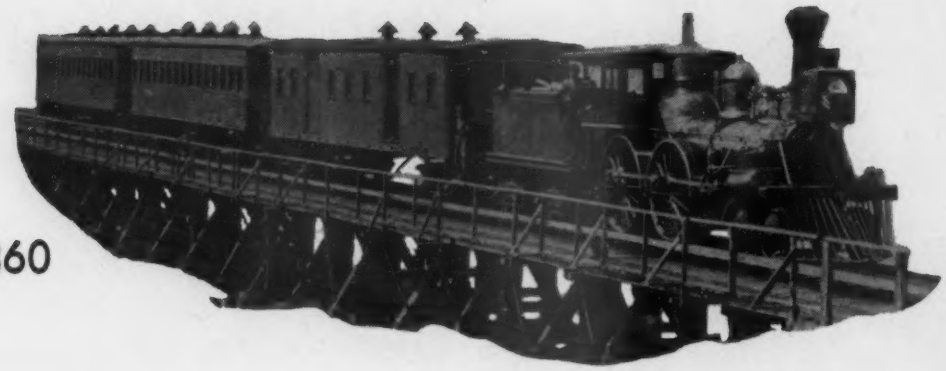
As changing times brought changing transportation requirements, air brake equipment has been developed to satisfy them. For instance—the AB-1-B brake equipment was developed for freight cars that are occasionally assigned to passenger train service. It reverts to regular "AB" functioning when the cars revert to regular freight service.

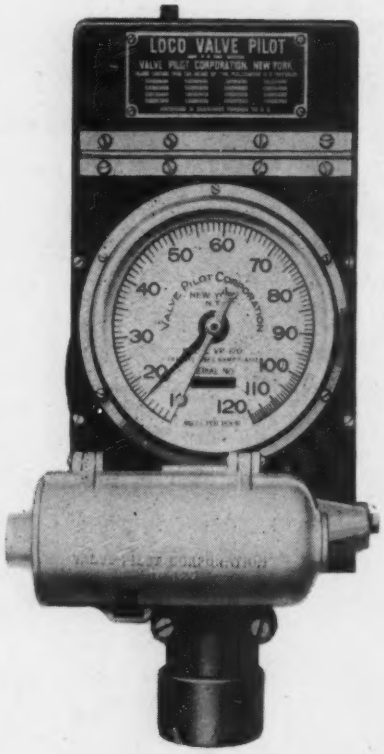
1869 1944

TO PERMIT TODAY'S TRAINS TO MOVE AT SHORTER INTERVALS WITH HEAVIER LOADS AT HIGHER SPEEDS—SAFELY.

Then *and* Now

1860



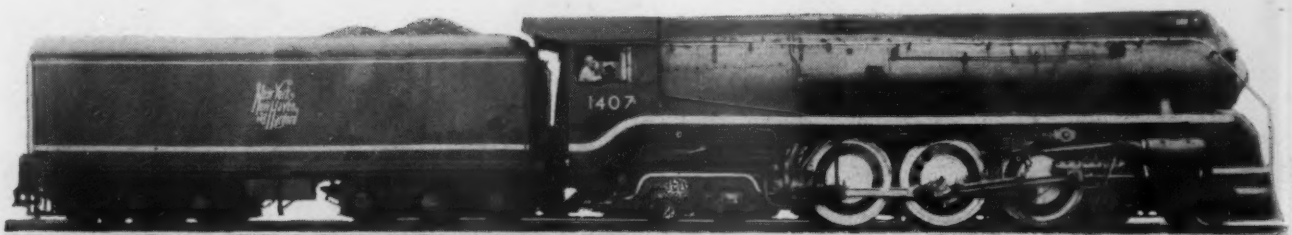


In 1860 when this "accommodation" served Norwalk and other Connecticut towns, the judgment of the engineman was the arbiter of speed and locomotive handling.

That "best method" of the last century has now been superseded.

In this era of instruments, the Valve Pilot leads to ideal operation of the 1407 "to extract the last ounce of effort of which it is capable" and makes a mile-by-mile record of the performance.

1944



VALVE PILOT CORPORATION

230 Park Avenue, New York 17, N. Y.

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF JUNE AND SIX MONTHS OF CALENDAR YEAR 1944—CONTINUED

Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures	Maintenance of Equipment	Traffic	Transportation	Total	Operating ratio	Net from railway operation	Operating income	Net railway operating income 1944	1943
Chicago, Milwaukee, St. Paul & Pacific	June	10,722	$13,712,452	$3,209,225	$18,720,427	$4,019,012	$2,901,361	$269,406	$6,004,225	$13,884,314	74.2	$4,836,113	$2,854,113	$2,545,473	$4,054,334
	6 mos.	10,731	83,399,573	15,767,011	109,035,829	17,526,690	16,970,631	1,567,551	36,747,166	76,866,181	70.5	32,169,648	16,777,648	15,245,298	28,038,227
Chicago, Rock Island & Pacific	June	7,751	10,926,359	3,851,487	15,960,440	2,252,566	2,115,873	347,955	4,393,413	9,695,848	60.7	6,264,592	3,043,588	2,497,630	3,097,363
	6 mos.	7,751	62,344,836	21,550,425	90,861,973	10,880,337	12,870,851	2,021,681	26,574,653	56,016,277	61.6	34,845,696	17,366,249	14,393,915	22,118,021
Chicago, St. Paul, Minneapolis & Omaha	June	1,617	1,609,518	378,555	2,188,137	362,553	337,587	40,773	936,131	1,759,101	80.4	429,036	277,561	246,662	377,360
	6 mos.	1,617	10,153,019	2,053,263	13,363,326	1,879,785	2,026,737	238,344	5,811,495	10,446,685	78.2	2,916,641	1,890,424	1,529,546	2,299,142
Clinchfield	June	302	1,114,508	12,327	1,134,805	92,244	188,950	21,689	235,304	561,117	49.4	573,688	446,070	472,433	340,295
	6 mos.	302	7,142,640	63,971	7,257,860	498,129	1,127,109	138,836	1,476,916	3,370,482	46.4	3,887,378	3,121,276	3,198,269	2,840,233
Colorado & Southern	June	748	962,822	338,165	1,397,657	204,363	212,601	17,429	414,570	898,095	64.3	499,562	307,468	259,065	237,019
	6 mos.	748	5,350,968	1,932,207	7,878,516	873,628	1,285,939	104,404	2,383,693	4,925,129	62.5	2,953,387	1,826,998	1,560,472	1,523,731
Forth Worth & Denver City	June	804	754,758	486,723	1,335,413	219,411	164,009	24,261	365,347	826,498	61.9	508,917	309,628	233,718	305,493
	6 mos.	804	4,166,666	2,707,155	7,482,461	1,350,893	841,184	145,355	1,968,463	4,664,903	62.3	2,817,558	1,647,705	1,374,743	1,642,890
Colorado & Wyoming	June	42	83,260	.....	124,364	9,694	22,273	784	49,343	86,655	69.6	37,709	22,946	22,373	18,462
	6 mos.	42	534,460	.....	858,029	64,568	121,099	4,549	337,811	555,359	64.7	302,670	208,242	203,522	133,683
Columbus & Greenville	June	168	110,024	13,554	132,494	28,192	20,831	3,880	54,670	121,158	91.4	11,336	2,347	4,164	—5,648
	6 mos.	168	642,229	72,607	769,543	151,408	107,845	26,393	268,746	636,985	82.8	132,558	41,210	52,881	38,063
Delaware & Hudson	June	846	3,824,690	174,483	4,119,475	517,811	1,063,095	52,081	1,350,672	3,096,054	75.2	1,023,421	577,933	581,364	751,753
	6 mos.	847	24,038,777	1,053,907	25,692,603	2,783,759	6,273,378	286,965	8,661,376	18,700,067	72.8	6,992,536	4,616,727	4,543,542	4,246,795
Delaware, Lackawanna & Western	June	973	5,024,869	945,688	6,653,857	739,816	1,014,617	109,403	2,566,471	4,624,169	69.5	2,029,688	983,688	871,152	940,799
	6 mos.	973	30,325,048	5,226,484	39,291,393	4,234,825	6,469,036	688,557	16,132,897	28,623,922	72.9	10,667,471	5,016,471	4,435,753	6,443,160
Denver & Rio Grande Western	June	2,391	4,323,213	871,729	5,453,893	952,348	1,165,189	104,653	1,683,045	4,108,299	75.3	1,345,594	847,043	805,260	1,573,758
	6 mos.	2,395	27,384,367	4,944,776	33,774,449	4,307,858	6,832,741	600,127	10,241,303	23,150,058	68.5	10,624,391	7,483,393	7,063,907	8,627,905
Denver & Salt Lake	June	232	244,967	9,764	264,528	98,503	55,863	3,010	86,557	255,808	96.7	8,720	—21,659	27,558	31,274
	6 mos.	232	1,510,307	53,445	1,621,740	374,659	326,742	16,431	553,155	1,342,037	82.8	279,703	100,690	393,946	495,336
Detroit & Mackinac	June	230	66,801	11,024	86,473	22,790	16,675	784	30,117	74,235	85.8	12,238	8,030	6,671	—2,575
	6 mos.	230	371,970	55,316	475,115	99,779	104,591	4,977	187,175	420,153	88.4	54,962	29,781	18,102	14,461
Detroit & Toledo Shore Line	June	50	301,807	.....	302,988	38,701	25,888	9,694	94,117	177,448	58.6	125,540	99,947	50,906	35,280
	6 mos.	50	2,290,089	.....	2,297,287	208,238	153,695	57,502	633,623	1,105,555	48.1	1,191,732	693,524	362,832	464,798
Detroit, Toledo & Ironton	June	464	608,778	1,479	645,862	99,405	129,447	14,850	177,546	446,569	69.1	199,293	110,599	120,518	171,205
	6 mos.	464	4,477,416	7,756	4,734,074	534,289	750,041	91,094	1,180,192	2,707,984	57.2	2,026,090	1,145,780	1,123,439	1,323,383
Duluth, Missabe & Iron Range	June	546	5,021,925	5,883	5,835,227	374,986	550,280	4,223	947,574	1,981,209	34.0	3,854,018	2,105,635	2,110,074	1,239,295
	6 mos.	545	13,192,390	30,862	15,358,704	2,203,358	3,267,335	26,360	3,385,802	9,180,743	59.8	6,177,961	3,067,347	3,194,482	1,635,592
Duluth, Winnipeg & Pacific	June	175	260,700	4,100	268,600	61,357	30,138	2,090	84,544	182,126	67.8	86,474	65,957	40,588	68,818
	6 mos.	175	1,851,000	19,600	1,896,900	284,876	198,355	12,191	727,603	1,247,689	65.8	649,211	511,454	285,298	158,544
Elgin, Joliet & Eastern	June	392	2,561,595	4	2,955,145	267,393	744,267	18,720	983,667	2,078,635	70.3	876,510	385,195	310,807	58,796
	6 mos.	392	14,845,026	55	17,119,573	1,575,889	4,558,548	102,619	6,178,235	12,804,839	74.8	4,314,734	1,926,472	1,524,683	655,301
Erie	June	2,244	11,136,402	1,091,368	13,098,447	1,454,361	2,229,806	226,260	4,610,821	9,000,520	68.7	4,097,927	4,323,187	3,730,839	1,443,273
	6 mos.	2,244	69,012,606	6,074,693	79,954,461	7,415,751	13,581,992	1,358,716	29,098,346	54,112,188	67.7	25,842,273	14,733,054	10,864,684	10,353,707
Florida East Coast	June	682	1,097,203	1,326,968	2,602,068	318,196	288,640	49,823	690,247	1,478,826	56.8	1,123,242	491,735	415,096	847,103
	6 mos.	682	9,705,911	7,385,829	18,343,109	2,034,738	1,716,980	295,341	4,756,039	9,578,523	52.2	8,764,586	4,598,664	3,841,266	5,611,331
Georgia Railroad	June	329	672,184	145,120	859,587	111,119	119,325	22,873	309,989	584,926	68.0	274,661	242,491	232,520	346,338
	6 mos.	329	3,991,276	946,689	5,203,569	570,114	699,568	129,925	1,851,678	3,384,020	65.0	1,819,549	1,615,575	1,587,488	2,137,234
Georgia & Florida	June	408	185,937	6,890	197,733	56,544	24,029	10,132	70,648	168,784	85.4	28,949	18,358	9,106	20,000
	6 mos.	408	1,091,752	40,326	1,163,118	305,615	145,544	62,105	400,958	959,025	82.5	204,093	140,500	77,878	111,133
Grand Trunk Western	June	1,026	2,367,000	423,000	2,984,000	531,834	498,835	36,979	1,129,341	2,307,473	77.3	676,527	462,903	413,164	536,423
	6 mos.	1,026	14,762,000	1,935,000	17,857,000	2,932,019	2,958,753	217,075	6,869,792	13,632,739	76.3	4,224,261	2,873,203	2,651,217	3,539,630
Canadian National Lines in New England	June	172	120,000	13,000	156,700	52,722	21,855	2,274	79,257	178,520	113.9	—21,820	—43,265	—71,454	—146,151
	6 mos.	172	731,800	53,900	952,200	263,057	193,293	13,727	555,457	1,147,667	120.5	—195,467	—324,137	—535,939	—619,768
Great Northern	June	8,372	15,973,014	1,891,981	19,248,461	3,336,895	2,803,722	216,007	4,485,387	11,318,024	58.8	7,930,437	2,900,200	2,759,243	3,123,645
	6 mos.	8,373	81,902,751	9,844,347	98,417,835	16,748,286	17,131,778	1,270,281	27,127,990	65,061,765	66.1	33,356,070	12,903,395	12,005,501	12,841,370
Green Bay & Western	June	234	226,651	795	233,125	84,029	26,704	8,661	69,055	195,859	84.0	37,266	—1,816	—11,481	40,664
	6 mos.	234	1,376,740	3,501	1,419,708	406,190	144,918	50,438	412,349	1,059,818	74.6	359,890	147,354	112,866	313,588
Gulf & Ship Island	June	259	89,325	47,877	160,718	47,018	22,422	2,433	85,103	166,542	103.6	—5,824	—24,207	—40,039	—47,350
	6 mos.	259	953,532	301,612	1,391,132	270,330	136,917	15,366	531,699	1,011,796	72.7	379,336	265,126	181,534	—149,262

Westinghouse-Baldwin electric locomotive in freight service.

Baldwin articulated steam locomotive on the Baltimore and Ohio Railroad.

Baldwin-Westinghouse 1000 horsepower diesel-electric locomotive.

BALDWIN SERVES THE NATION WHICH THE RAILROADS HELPED TO BUILD

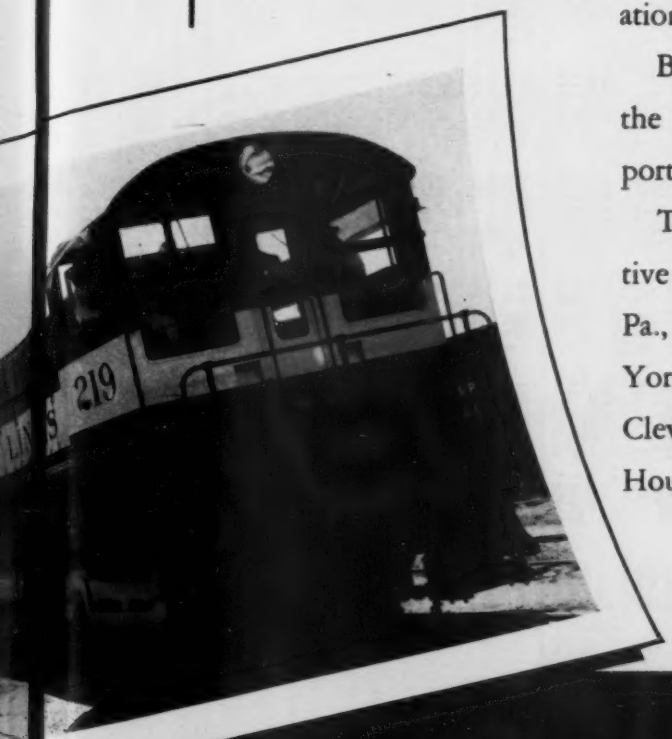
BALDWIN

Steam · Diesel-Electric and Electric Locomotives

HELPING THE RAILROADS TO HAUL AMERICA'S WARTIME FREIGHT

The railroads are doing a tremendous job for America, hauling more than 2½ times as much wartime freight as all other forms of transportation combined.

Without the raw materials, finished products and millions of troops transported by the railroads since 1941. there could be no far-flung invasion operations — no final victory.



Baldwin locomotives of all types are helping the railroads with this task — the greatest transportation job in history.

The Baldwin Locomotive Works, Locomotive and Ordnance Division, Philadelphia, Pa., U. S. A. Offices: Philadelphia, New York, Chicago, Washington, Boston, Cleveland, St. Louis, San Francisco, Houston.

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BALDWIN PRODUCTS for the railroads: Steam, Diesel-electric and electric locomotives, Diesel engines, hydraulic presses, special railroad shop equipment, testing machines and instruments, steel tires and rolled steel wheels, crane wheels, connecting rods and other steel forgings, steel castings, springs, metal plate fabrication, boilers, non-ferrous castings, bending rolls, plate planers, dynamometer cars.

REVENUE AND EXPENSES OF RAILWAYS

MONTH OF JUNE AND SIX MONTHS OF CALENDAR YEAR 1944—CONTINUED

Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of—Way and structures	Maintenance of—Equipment	Traffic	Transportation	Total	Operating ratio	Net from railway operation	Operating income	Net railway operating income: 1944	1943
Gulf, Mobile & Ohio	June	1,973	$2,920,041	$250,177	$3,276,486	$517,394	$567,075	$81,646	$864,741	$2,149,321	65.6	1,127,165	612,387	450,231	333,284
	6 mos.	1,973	16,723,786	1,359,691	18,704,339	3,026,287	3,165,223	480,824	5,132,082	12,503,975	66.9	6,200,364	3,278,817	2,369,240	2,525,244
Illinois Central	June	4,823	13,973,704	3,417,204	18,567,220	2,926,654	3,117,002	170,401	5,028,892	11,865,291	63.9	6,701,929	2,426,955	2,146,601	2,577,257
	6 mos.	4,823	85,131,702	18,604,232	110,633,377	14,900,092	19,338,776	1,109,925	31,398,452	70,483,257	63.7	40,150,120	15,826,161	14,054,795	17,244,685
Yazoo & Mississippi Valley	June	1,524	1,888,700	409,794	2,449,669	547,786	356,197	26,594	884,253	1,905,459	77.8	544,210	374,131	250,975	684,467
	6 mos.	1,524	13,298,713	2,524,891	16,775,964	2,698,613	1,981,227	176,237	5,631,031	11,037,922	65.8	5,738,042	2,723,083	2,084,418	4,026,414
Illinois Central System	June	6,347	15,862,404	3,826,998	21,016,889	3,474,440	3,473,199	196,995	5,913,145	13,770,750	65.5	7,246,139	2,795,305	2,403,489	3,261,637
	6 mos.	6,347	98,430,415	21,129,123	127,409,341	17,598,705	21,320,003	1,286,162	37,029,483	81,521,179	64.0	45,888,162	18,519,155	16,167,691	21,279,576
Illinois Terminal	June	476	680,564	186,309	946,454	119,548	92,240	19,263	280,105	538,590	56.91	407,864	113,554	84,698	119,281
	6 mos.	476	4,097,330	1,055,492	5,625,516	591,014	552,535	118,158	1,703,049	3,124,633	55.54	2,500,883	843,588	667,932	691,474
Kansas City Southern	June	878	3,142,371	361,735	3,702,293	377,840	471,869	59,973	962,340	1,995,209	53.9	1,707,084	729,084	479,047	436,076
	6 mos.	878	18,479,165	2,618,795	22,286,270	2,990,217	2,977,757	370,612	5,988,807	13,095,332	58.8	9,190,938	4,287,938	2,836,191	3,205,335
Kansas, Oklahoma & Gulf	June	328	342,245	1,628	347,696	40,296	20,965	9,974	71,137	153,317	44.1	194,379	111,224	86,495	4,082
	6 mos.	328	2,049,813	9,538	2,078,062	229,680	130,669	56,662	465,482	947,709	45.6	1,130,353	632,347	489,437	401,998
Lake Superior & Ishpeming	June	156	355,893	142	448,133	42,857	30,467	806	73,455	155,590	34.7	292,543	158,730	165,500	196,527
	6 mos.	156	920,736	822	1,170,657	182,952	225,227	3,658	290,215	750,919	64.1	419,738	148,533	196,795	128,841
Lehigh & Hudson River	June	96	271,868	.....	272,339	54,585	40,614	5,043	74,928	181,996	66.8	90,343	42,118	21,660	21,539
	6 mos.	96	1,746,887	1,653	1,753,114	279,947	212,595	31,536	510,363	1,077,333	61.5	675,781	283,326	152,508	173,275
Lehigh & New England	June	190	523,152	.....	526,696	41,021	117,011	7,796	153,194	338,564	64.3	188,132	105,127	114,323	70,493
	6 mos.	190	3,142,694	.....	3,161,138	285,384	720,289	46,784	928,474	2,103,634	66.5	1,057,504	587,321	652,182	665,090
Lehigh Valley	June	1,260	7,390,086	703,518	8,538,502	1,232,173	1,386,720	124,601	3,044,218	6,006,862	70.4	2,531,640	1,598,348	1,000,783	1,078,482
	6 mos.	1,260	43,459,310	4,285,596	50,361,591	6,876,194	7,919,992	730,509	18,702,582	35,529,320	70.5	14,832,271	8,036,635	5,153,309	6,595,089
Louisiana & Arkansas	June	834	1,492,862	174,224	1,724,018	346,523	185,366	31,955	363,393	987,912	57.3	736,106	282,256	205,694	157,567
	6 mos.	834	8,664,686	936,167	9,964,219	2,152,370	1,083,435	209,569	2,172,046	5,993,861	60.2	3,970,358	1,458,074	1,045,728	1,157,102
Louisville & Nashville	June	4,744	12,989,416	4,191,542	18,257,672	1,844,788	2,954,205	219,157	5,384,969	11,025,375	60.4	7,232,297	1,893,464	2,139,657	2,189,196
	6 mos.	4,745	77,386,069	22,830,010	106,597,358	11,570,445	18,082,147	1,224,608	30,808,649	65,224,645	61.2	41,372,713	10,881,589	12,447,950	13,178,430
Maine Central	June	988	1,127,267	343,735	1,609,311	279,959	295,215	13,223	530,298	1,168,080	72.6	441,231	134,978	117,187	201,058
	6 mos.	988	7,425,244	1,834,227	9,943,402	1,724,615	1,699,404	77,603	3,500,634	7,299,586	73.4	2,643,816	1,182,306	961,736	1,552,295
Midland Valley	June	334	136,450	63	138,403	29,768	12,847	2,395	46,010	95,436	69.0	42,967	26,538	12,683	—17,959
	6 mos.	334	826,912	1,064	839,806	167,530	73,301	14,314	278,939	562,551	67.0	277,255	186,304	114,986	203,321
Minneapolis & St. Louis	June	1,408	1,295,216	36,933	1,382,918	290,178	164,101	61,030	396,141	961,313	69.5	421,605	225,628	220,640	220,579
	6 mos.	1,408	6,895,714	221,983	7,402,108	1,369,914	1,027,456	391,627	2,321,402	5,448,533	73.6	1,953,575	975,494	945,116	1,779,054
Minneapolis, St. Paul & Sault Ste. Marie	June	4,277	3,948,161	289,508	4,542,775	803,687	681,791	74,416	1,552,209	3,244,526	71.4	1,298,249	758,836	752,823	609,467
	6 mos.	4,277	23,177,587	1,390,267	26,188,450	3,848,897	4,216,333	438,478	9,368,701	18,631,328	71.1	7,557,122	5,599,330	5,295,838	3,313,422
Duluth, South Shore & Atlantic	June	551	296,895	39,656	365,008	81,005	66,046	8,603	131,493	295,774	81.0	69,234	48,382	48,876	136,742
	6 mos.	551	1,825,430	179,037	2,133,386	387,331	339,423	51,622	804,482	1,631,944	76.5	501,442	397,817	366,230	436,388
Spokane International	June	152	151,361	7,740	168,444	40,782	15,622	3,570	49,008	116,361	69.1	52,083	31,539	14,998	19,237
	6 mos.	152	941,936	56,596	1,048,555	270,836	87,471	20,866	298,362	719,308	68.5	329,247	195,104	118,215	171,127
Mississippi Central	June	158	160,035	8,435	171,741	26,469	19,516	9,061	42,548	106,809	62.2	64,932	41,369	29,238	11,795
	6 mos.	158	1,063,013	36,589	1,114,747	174,553	102,564	53,783	298,245	675,866	60.6	438,881	281,318	200,516	152,253
Missouri & Arkansas	June	365	193,477	3,759	205,584	43,554	24,727	6,915	65,017	146,717	71.4	58,867	26,582	11,565	—16,814
	6 mos.	365	1,131,998	21,760	1,208,374	264,315	134,951	44,328	395,246	879,108	72.8	329,266	200,854	100,280	38,927
Missouri-Illinois	June	172	251,980	840	254,603	35,463	42,066	4,069	73,546	161,065	63.3	93,538	38,755	34,929	30,714
	6 mos.	172	1,455,654	7,789	1,472,296	252,771	236,208	22,853	392,773	936,659	63.6	535,637	210,260	183,709	204,825
Missouri-Kansas-Texas Lines	June	3,253	5,744,280	1,396,119	7,603,741	1,671,087	872,156	134,141	2,064,736	4,963,050	65.3	2,640,691	902,935	393,343	813,321
	6 mos.	3,270	30,163,542	6,792,477	39,900,363	8,327,871	4,995,598	795,282	11,985,983	27,527,102	69.0	12,373,261	6,120,427	3,673,804	3,325,346
Missouri Pacific	June	7,097	14,091,500	3,585,074	19,004,360	2,359,562	2,655,267	308,732	5,193,005	11,067,923	58.2	7,936,437	3,025,889	2,238,200	2,706,970
	6 mos.	7,097	84,689,508	21,400,640	114,011,585	12,962,856	15,724,110	1,803,225	32,529,325	66,312,332	58.2	47,699,253	21,003,369	15,982,550	21,513,574
Gulf Coast Lines	June														
	6 mos.														
International Great Northern	June	1,110	1,681,201	607,487	2,542,076	545,910	354,238	33,799	839,726	1,879,121	73.9	662,955	482,431	291,677	293,757
	6 mos.	1,110	10,600,767	3,166,384	15,184,277	2,672,100	2,079,819	213,200	4,936,376	10,505,425	69.2	4,678,852	2,793,486	1,736,306	2,204,309
Monongahela	June	170	567,325	2,366	575,237	79,978	52,618	694	141,984	279,311	48.6	295,926	171,993	83,434	—695
	6 mos.	170	3,396,590	11,391	3,437,269	428,826	283,359	4,402	863,415	1,604,961	46.7	1,832,308	1,083,981	568,604	697,667

REVENUES AND EXPENSES OF RAILWAYS

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF JUNE AND SIX MONTHS OF CALENDAR YEAR 1944—CONTINUED

Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures	Maintenance of Equipment	Traffic	Transportation	Total	Operating ratio	Net from railway operation	Operating income	Net railway operating income: 1944	1943
Montour	June	51	$273,219	.....	$275,095	$25,127	$64,043	$942	$72,966	$171,566	62.4	$103,529	$35,823	$75,945	$58,781
	6 mos.	51	1,491,142	.....	1,498,993	103,810	392,446	5,828	436,423	987,519	65.9	511,474	150,436	380,184	384,307
Nashville, Chattanooga & St. Louis	June	1,072	2,583,509	$610,884	3,409,959	605,733	740,893	77,234	1,038,191	2,566,463	75.3	843,496	212,249	173,666	235,991
	6 mos.	1,072	15,734,982	4,073,414	21,355,743	3,574,088	4,240,234	471,521	6,507,894	15,438,260	72.3	5,917,483	2,525,153	2,306,597	2,935,295
New York Central	June	10,746	39,099,057	18,266,223	63,372,603	8,573,934	10,637,723	699,066	20,298,074	42,432,403	67.0	20,940,200	9,470,717	7,858,229	7,606,999
	6 mos.	10,746	236,432,004	89,592,930	358,505,202	49,286,513	64,169,815	4,163,864	128,261,576	259,354,241	72.3	99,150,961	44,398,891	34,200,396	46,120,931
Pittsburgh & Lake Erie	June	229	2,807,888	119,959	3,019,325	342,860	1,000,543	42,976	909,733	2,402,283	79.6	617,042	240,695	769,860	436,571
	6 mos.	229	16,371,495	633,364	17,551,708	1,904,658	5,624,852	264,384	5,580,376	14,023,457	79.9	3,528,251	—351,388	2,880,668	3,330,333
New York, Chicago & St. Louis	June	1,688	7,927,011	335,896	8,417,367	888,491	1,238,991	143,177	2,481,625	4,978,106	59.1	3,439,261	1,360,733	939,627	1,141,172
	6 mos.	1,688	47,613,952	2,287,814	50,807,292	5,108,058	7,226,426	825,386	15,610,056	30,032,058	59.1	20,775,234	8,595,254	5,638,079	6,876,067
New York, New Haven & Hartford	June	1,838	8,191,497	6,814,657	16,170,484	2,153,205	2,327,225	134,917	5,067,488	10,372,408	64.1	5,798,076	3,316,776	2,252,821	3,062,219
	6 mos.	1,838	49,079,856	36,059,962	92,032,445	11,802,131	13,589,857	902,757	31,642,883	62,207,429	67.6	29,825,016	19,123,140	12,631,884	17,129,822
New York Connecting	June	21	296,966	.....	320,909	55,349	12,915	.....	50,763	120,783	37.6	200,126	49,079	227,833	78,292
	6 mos.	21	1,355,433	.....	1,503,986	378,041	77,647	.....	317,547	785,472	52.2	718,514	49,866	891,852	635,087
New York, Ontario & Western	June	546	748,629	69,798	875,597	107,067	169,565	23,754	463,933	789,108	90.1	86,489	39,941	—49,068	35,707
	6 mos.	546	4,156,181	173,950	4,695,570	533,710	914,334	137,074	2,637,404	4,382,572	93.3	312,998	62,298	—253,167	23
New York, Susquehanna & Western	June	120	412,939	35,040	459,702	38,400	33,888	4,560	162,624	255,495	55.6	204,207	131,677	80,068	83,527
	6 mos.	120	2,739,582	208,684	3,034,451	215,434	289,107	28,865	1,066,809	1,697,404	55.9	1,337,047	890,285	471,706	545,714
Norfolk & Western	June	2,154	11,931,818	1,565,136	13,909,968	1,386,632	2,614,929	164,845	2,925,682	7,419,669	53.3	6,490,299	1,576,094	2,234,280	1,650,766
	6 mos.	2,154	68,054,487	8,532,090	79,074,324	8,679,591	15,854,304	950,898	17,433,539	45,031,837	56.9	34,042,487	8,885,445	12,958,500	11,418,901
Norfolk Southern	June	727	684,274	33,835	738,834	158,804	84,588	29,988	248,776	550,230	74.5	188,604	113,327	77,298	138,308
	6 mos.	727	3,723,159	155,037	4,007,599	997,164	484,290	167,241	1,407,796	3,213,720	80.2	793,879	470,641	305,450	542,346
Northern Pacific	June	6,867	10,105,545	2,092,933	13,437,477	1,841,341	2,469,215	182,906	3,627,938	8,666,909	64.5	4,770,568	1,635,726	2,046,198	2,683,262
	6 mos.	6,867	58,100,584	10,710,046	75,076,826	10,182,014	14,652,753	1,070,991	22,083,692	51,413,908	68.5	23,662,918	8,322,768	10,657,299	14,349,269
Northwestern Pacific	June	331	418,165	22,250	464,280	193,586	66,891	2,875	166,904	441,295	95.0	22,985	—1,848	—23,328	102,048
	6 mos.	331	2,659,579	108,215	2,889,738	1,064,541	364,931	16,850	958,024	2,448,772	84.7	440,966	278,102	148,952	443,509
Oklahoma City-Ada-Atoka	June	132	145,667	1,177	147,966	14,524	4,473	1,089	27,883	52,146	35.2	95,820	53,406	38,992	38,626
	6 mos.	132	801,420	3,894	814,113	107,976	29,530	7,546	176,970	348,752	42.8	465,361	269,766	186,558	146,000
Pennsylvania	June	10,099	58,353,829	22,006,284	86,948,906	10,117,456	15,803,889	1,061,339	31,482,913	61,181,525	70.4	25,767,381	11,416,975	10,369,258	9,411,311
	6 mos.	10,101	338,328,326	127,016,891	501,531,403	57,424,433	94,529,627	6,200,347	195,354,798	370,178,112	73.8	131,353,291	58,349,768	51,869,894	60,285,685
Long Island	June	376	1,127,716	2,590,483	3,899,294	539,357	543,402	15,132	1,607,830	2,759,864	70.8	1,139,430	548,885	312,679	797,299
	6 mos.	376	7,149,572	12,843,273	21,043,844	3,476,613	3,316,729	126,284	9,692,023	16,946,253	80.5	4,097,591	1,810,711	380,329	1,135,461
Pennsylvania-Reading Seashore Lines	June	392	520,322	570,758	1,129,907	144,917	89,552	13,569	479,705	754,669	66.8	375,238	257,965	126,487	138,109
	6 mos.	392	3,032,443	1,894,098	5,130,575	955,582	599,318	53,066	2,723,249	4,471,799	87.2	658,776	81,854	—558,505	—199,558
Pere Marquette	June	1,949	4,184,536	362,568	4,794,525	824,878	847,155	71,771	1,617,899	3,537,733	73.8	1,256,792	466,429	374,324	500,536
	6 mos.	1,974	25,112,097	1,884,648	28,207,199	4,609,623	4,941,284	431,101	9,954,725	21,025,623	74.5	7,181,576	2,733,498	2,292,471	3,509,560
Pittsburgh & Shawmut	June	97	134,798	.....	135,380	47,450	26,520	2,202	38,219	120,943	89.3	14,437	9,971	6,616	4,415
	6 mos.	97	776,627	.....	780,419	183,652	148,838	11,885	215,847	597,468	76.6	182,951	139,357	129,133	114,946
Pittsburgh & West Virginia	June	136	603,211	.....	620,342	116,041	114,140	20,451	157,659	436,108	70.3	184,234	109,385	135,420	161,093
	6 mos.	136	3,458,388	70	3,567,793	565,029	698,665	127,127	892,225	2,443,171	68.5	1,124,622	676,584	832,389	943,492
Pittsburg & Shawmut	June	190	99,019	.....	100,146	28,689	23,521	1,148	44,297	103,173	103.0	—3,027	—10,277	—14,332	—3,611
	6 mos.	190	648,250	.....	655,860	146,493	145,056	6,599	283,071	616,569	94.0	39,291	—2,314	—36,528	68,046
Reading	June	1,410	8,331,298	850,839	9,605,329	1,302,487	2,064,874	80,655	2,817,341	6,493,108	67.6	3,112,221	1,314,088	1,227,469	1,184,752
	6 mos.	1,413	50,836,770	5,056,834	58,539,487	6,870,005	11,434,965	493,965	19,806,057	39,921,763	68.2	18,617,724	8,524,176	7,614,011	9,951,975
Richmond, Fredericksburg & Potomac	June	118	1,534,778	1,359,434	3,142,440	215,321	346,333	17,825	833,198	1,530,478	48.7	1,611,962	426,518	271,160	291,444
	6 mos.	118	9,506,026	8,174,502	19,329,776	1,171,811	2,071,646	86,888	4,733,261	8,769,353	45.4	10,560,423	2,802,038	1,723,309	2,034,084
Rutland	June	407	302,743	50,197	416,450	63,850	84,967	12,143	202,709	377,432	90.6	39,018	15,152	15,841	48,834
	6 mos.	407	1,703,250	319,254	2,389,835	354,937	515,017	70,626	1,222,659	2,251,689	94.2	138,146	—11,406	—3,918	131,636
St. Louis-San Francisco	June	4,646	6,887,938	2,152,111	9,703,390	1,282,053	1,750,857	165,453	3,041,751	6,595,701	68.0	3,107,689	1,436,251	1,394,131	2,058,098
	6 mos.	4,653	40,059,515	11,875,301	55,890,982	7,702,887	10,414,150	999,517	18,242,078	39,404,843	70.5	16,486,139	7,861,810	7,760,019	10,988,476
St. Louis, San Francisco & Texas	June	159	281,336	22,298	310,158	36,608	30,431	12,331	101,913	188,542	60.8	121,616	66,008	48,138	125,318
	6 mos.	159	1,861,743	165,965	2,071,685	208,150	174,887	67,291	601,683	1,096,046	52.9	975,639	393,762	243,864	558,542

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF JUNE AND SIX MONTHS OF CALENDAR YEAR 1944—CONTINUED

Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures	Maintenance of Equipment	Traffic	Transportation	Total	Operating ratio	Net from railway operation	Operating income	Net railway operating income 1944	Net railway operating income 1943
St. Louis Southwestern Lines	June	1,607	$5,440,219	$347,572	$5,922,721	$575,161	$570,211	$108,340	$1,343,228	$2,729,319	46.1	$3,193,402	$1,191,759	$881,530	$854,057
	6 mos.	1,607	31,096,172	1,860,343	33,748,683	3,721,857	3,247,738	589,762	8,110,158	16,439,515	48.7	17,309,168	6,462,935	4,772,107	6,092,781
Seaboard Air Line	June	4,174	7,110,589	3,488,720	11,304,051	1,597,679	1,626,331	239,007	3,330,337	7,293,732	64.5	4,010,319	2,110,319	1,792,029	1,650,504
	6 mos.	4,175	46,736,260	21,581,166	72,826,430	8,717,790	9,867,248	1,362,694	21,263,547	44,203,808	60.7	28,622,622	14,622,622	11,628,109	20,168,571
Southern Railway	June	6,513	15,278,897	5,115,255	21,591,785	2,444,186	3,499,842	238,846	5,897,539	12,766,530	59.1	8,825,255	2,937,944	2,635,375	2,947,962
	6 mos.	6,513	92,499,173	29,259,528	129,214,463	15,423,116	19,488,490	1,213,130	36,684,026	76,545,591	59.2	52,668,872	18,644,944	16,565,960	17,348,286
Alabama Great Southern	June	315	1,409,926	433,359	1,933,093	170,697	349,858	24,632	504,012	1,106,204	57.2	826,889	180,531	127,334	172,566
	6 mos.	315	8,228,589	2,462,330	11,263,592	1,038,967	1,742,922	129,393	3,316,917	6,587,810	58.5	4,675,782	1,347,720	1,012,386	1,266,074
Cincinnati, New Orleans & Texas Pacific	June	337	2,381,859	571,060	3,101,723	293,244	691,407	40,325	811,601	1,929,102	62.2	1,172,621	356,461	381,228	515,094
	6 mos.	337	14,515,618	3,676,125	19,105,211	1,838,976	3,798,361	203,492	4,866,202	11,243,424	58.9	7,861,787	2,307,793	2,518,243	2,917,480
Georgia Southern & Florida	June	397	279,001	188,428	514,486	77,842	79,898	2,553	175,592	352,777	68.6	161,709	75,253	40,997	119,788
	6 mos.	397	1,867,298	1,201,178	3,393,824	474,505	445,574	15,754	1,066,897	2,102,014	61.9	1,291,810	556,896	334,772	557,343
New Orleans & Northeastern	June	204	808,686	272,985	1,129,319	133,149	122,981	12,317	319,538	626,612	55.5	502,707	168,690	95,889	152,777
	6 mos.	204	4,886,906	1,232,900	6,414,268	800,698	689,219	66,495	1,899,163	3,678,483	57.3	2,735,785	1,040,202	548,406	818,123
Southern Pacific	June	8,263	29,054,577	9,466,770	41,757,585	5,777,313	7,446,600	626,100	12,200,034	28,193,581	67.5	13,564,004	5,195,028	3,623,126	5,325,350
	6 mos.	8,263	170,616,556	54,805,996	244,856,065	34,460,414	44,260,046	3,504,456	73,837,078	168,878,157	69.0	75,977,908	27,810,881	19,551,738	33,227,960
Texas & New Orleans	June	4,340	8,106,713	2,616,771	11,385,482	1,457,092	1,354,519	154,610	2,748,639	6,070,388	53.3	5,315,094	1,744,833	1,259,303	2,846,422
	6 mos.	4,341	49,313,849	14,474,852	67,413,196	8,769,556	7,968,004	918,880	16,873,512	36,775,772	54.6	30,637,424	11,770,128	8,703,112	15,030,565
Spokane, Portland & Seattle	June	944	1,893,392	242,849	2,256,670	614,896	175,699	13,474	606,589	1,476,024	65.4	780,646	570,173	352,172	330,576
	6 mos.	944	10,079,623	1,227,630	11,941,976	3,183,366	1,137,476	83,663	3,770,525	8,562,427	71.7	3,379,549	2,465,952	1,431,251	3,371,917
Tennessee Central	June	286	346,129	57,821	421,452	73,126	60,194	6,903	133,151	289,163	68.6	132,289	95,086	76,310	141,505
	6 mos.	286	2,089,648	352,154	2,564,111	519,562	390,386	42,953	804,923	1,865,091	72.8	698,420	395,923	286,763	427,577
Texas & Pacific	June	1,884	3,914,054	1,780,712	6,251,623	851,264	965,760	110,403	1,494,059	3,687,541	59.0	2,564,082	669,155	528,441	798,423
	6 mos.	1,884	25,450,339	10,625,819	39,466,256	5,246,378	5,894,374	656,626	9,182,486	22,631,473	57.3	16,834,783	4,460,705	3,381,970	4,553,227
Texas Mexican	June	162	176,495	898	205,469	30,524	17,841	4,319	48,946	111,661	54.3	93,808	64,205	50,667	55,761
	6 mos.	162	1,036,283	5,689	1,202,117	140,196	100,308	25,262	285,039	608,634	50.6	593,483	439,958	385,047	295,185
Toledo, Peoria & Western	June	239	435,082	30	443,304	40,435	20,202	24,359	88,495	188,916	42.6	254,388	235,167	213,114	212,455
	6 mos.	239	2,659,017	485	2,686,787	238,428	127,214	142,041	533,698	1,114,753	41.5	1,572,034	1,391,306	1,258,276	1,213,305
Union Pacific System	June	9,782	27,965,738	8,203,070	39,237,759	5,718,283	6,729,195	578,465	10,528,120	25,667,868	65.4	13,569,891	3,636,498	2,672,390	1,917,103
	6 mos.	9,782	171,361,117	46,181,031	235,165,176	33,101,804	44,105,707	3,472,789	67,351,568	159,085,159	67.6	76,080,017	22,032,108	16,984,103	24,051,594
Utah	June	111	105,266	.....	105,307	17,486	39,026	569	32,694	94,067	69.3	11,240	6,326	6,044	—20,835
	6 mos.	111	736,530	.....	737,193	95,911	241,835	3,301	221,416	588,775	79.9	148,418	79,052	63,726	55,408
Virginian	June	657	2,233,624	10,168	2,327,982	262,446	558,706	24,665	464,154	1,370,336	58.9	957,646	455,646	592,756	457,453
	6 mos.	657	14,541,068	50,104	15,070,475	1,487,460	3,258,612	146,752	3,092,697	8,334,851	55.3	6,735,624	3,113,624	3,662,984	3,529,681
Wabash	June	2,393	6,472,836	915,588	7,853,304	1,012,092	1,007,765	175,093	2,377,305	4,831,652	61.5	3,021,652	1,135,146	736,717	962,315
	6 mos.	2,393	39,417,266	5,376,626	47,552,890	5,967,078	5,817,949	956,723	14,510,619	28,744,281	60.4	18,808,609	6,746,705	4,571,404	5,885,763
Ann Arbor	June	294	427,788	12,814	460,593	69,380	82,062	16,839	191,739	372,335	80.8	88,258	45,388	41,777	57,666
	6 mos.	294	2,777,609	50,703	2,898,678	365,783	504,069	96,332	1,202,305	2,238,234	77.2	660,444	352,406	327,998	442,954
Western Maryland	June	840	2,891,315	31,934	3,001,785	437,732	612,828	44,076	792,374	1,982,592	66.0	1,019,193	465,193	493,791	518,559
	6 mos.	840	18,069,564	185,366	18,764,863	2,231,515	3,502,627	265,055	4,987,723	11,527,757	61.4	7,237,106	3,466,106	3,624,044	4,064,101
Western Pacific	June	1,195	3,105,224	662,473	3,939,439	621,455	582,352	69,945	1,241,530	2,674,229	67.9	1,265,210	824,683	720,031	1,171,360
	6 mos.	1,195	20,070,985	3,795,341	24,766,621	3,121,523	3,393,041	482,735	7,345,147	15,213,321	61.4	9,553,300	3,976,949	3,231,915	4,964,420
Wheeling & Lake Erie	June	507	2,128,287	.....	2,186,111	258,546	381,648	40,986	640,566	1,372,400	62.8	813,711	142,162	297,736	295,836
	6 mos.	507	11,853,201	16	12,220,927	1,301,603	2,323,758	245,715	3,670,963	7,851,054	64.2	4,369,873	569,792	1,614,503	1,823,202

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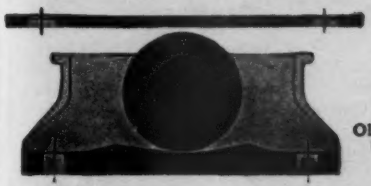

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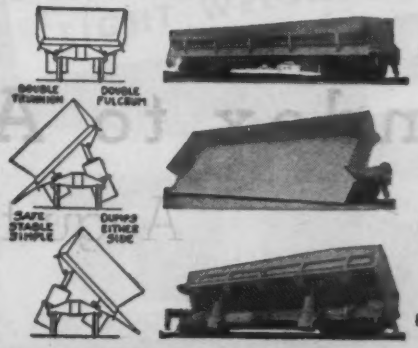

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12. (Spring Switche[illegible]. Tr[illegible] move-
ments in the facing [illegible]ection over
spring switches at [illegible]elhu[illegible]h Junction
must not exceed e[illegible]ght miles p[illegible]r hour.

time table restrictions over spring switches...

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